The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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vertical section of the Aitken coking oven, clearly in our illustration that a detailed de-

After the oven has been dried and heated, it is charged in the usual way, and as soon as the piston. The operation is as follows: Supposheat has caused sufficient gas to be evolved to produce combustion, the blast is turned into ture of the heater is raised by suitable means; the oven above the surface of the coal to be coked. The introduction of air by blast creates of air is regulated by the blast, so that in the mixture of carbureted hydrogen and air in the oven over the coal there is always and air in the tank to be supported by the water there. A pressure is thus created in the reservoir, which forces the water there out and up to the tank to be supported by the water there. gas unconsumed. The quantity of air required the heater is cooled by removing the fire and is greatest in the early stages of the charge, and is gradually diminished toward the close. When all the gas has been given off the coke is allowed to cool down or it is watered out and drawn in the ordinary manner.

The heat caused by the blast is very high, but as the air is directed above the surface of the burning coal, and not through it, only the coal gas (carbureted bydrogen) is consumed in the process of combustion and the generation of the heat, while the solid carbon in the form of coke remains at the bottom of the oven entirely unaffected by combustion which goes on above it. Hence the large increase in the quantity of coke produced by this process. Further by the introduction of the air blast over the coal in the oven, 66 per cent. of excellest coke has been obtained from coals which could not be made into good coke by the ordi

Trials which have been very carefully conducted by the patentee at the "Almond Iron Works," Falkirk, and which have extended over a period of 12 months, show that with average charges of 3 tons 4 cwt. of coal, the average time from charge to discharge with the patent blast oven was 62 hours. To coke the same coal in the ordinary way 80 hours were required. The time varies somewhat according to the nature of the coal, but in all cases the advantage was much in favor of the Aitken process. It was clearly established that 80 ovens with the patent process would produce as much coke as 100 ordinary ovens in the same period of time.

It is almost universally admitted that the "Beehive" oven produces the best quality of coke. The serious drawback under which it labors is that however carefully managed the yield is very much less than the amount of carbon theoretically contained in the coal, in some cases 20 per cent. of carbon being destroyed by oxidation. To make the "Beehive" oven pro duce within 2 or 4 per cent. of the actual quantity of coke contained in the coal is the aim, and proved result of this patent, as may be seen from the following table. These results were obtained by working an ordinary Beehive oven fitted with Mr. Aitken's patent, and the different coals specified are compared with the yield parts. with retorts. In the retort no oxidation of the fixed or the solid carbon can take place, and

Description of Coal.	Total average of Coke in Coal as determined by Retort, Breeze included.	Average yield by Altken's Pat- ent Coking Pro- cess, free from Breeze.	Difference including Breeze and Loss.
Blackbraes Semi-Cok- ing Coal, free from breeze, 17 charges consecutively Weardale Iron Comp'y, Head Hill or Medburn	66.45 ≴	65-27 ≰	1.18 ≰
Coal, 19 charges con- secutively Newton and Thorn- cliffe Coal, Stafford- shire Silkstone, 4	73-94 ≤	69-46 %	4.48 ≼
charges consecutive- ly	65-63 ≰	62-65 ≰	2-98 ≰
Bo. Soft or Coxroad Seam ground, 2	66-52 ≰	65.18 ≰	1.8 %
charges consecutive-	68-75 ≴	65-19 ≰	3:56 ≴

Mr. James Henderson, No. 30 Vesey street, New York, represents the inventor in this

Scientific and Technical Notes.

We learn from our French exchanges that M. Th. Foucault has invented

A NEW APPARATUS FOR RAISING WATER. in which the power is furnished by ammoniacal gas. The machine depends for its operation on the facts that water at 15° C. absorbs 748 times its volume of ammoniacal gas, and gives it off again at 60° C.; that at 100° C. the tension of the vapor is seven and onehalf atmospheres; that petroleum and ammoniacal gas are without action upon each other;

be raised. The reservoir contains a small quankeep the ammoniacal gas from contact with it, and, as the inventor expresses it, forms a fluid ing the reservoir full of water, the temperaammoniacal gas is given off, and passes over allowing a jet of water from the tank to play on it. The water in the heater as it cools reabsorbs the ammoniacal gas from the reservoir, and thus creates a vacuum, which the water thus refills the reservoir. The heater is then

The Aitken Hot and Cold Blast Coking a heater which is partially filed with a strong slowness of the workmen at either end of the behaved equally well if the attempt to unload to an English fleet which forced the passage of aqueous solution of ammoniacal gas. This pipe in unfastening the rivets, it was nearly heater is connected by pipe with the upper 10:30 o'clock before the pipe was ready to lower. We show in the accompanying illustration a part of a closed reservoir, the lower part of the In the meantime a new complication arose, reservoir being connected by means of pipe which threatened serious consequences. The which has lately attracted some attention in this country. The construction is shown so from which and the tank to which water is to 1000 feet long, threatened its expansion several inches, which, had it happened, would probscription is not needed to make it plain to the ironmester. Its operation may be described as on the surface of the water, and serves to pipe. However, the preliminary work was pipe. However, the preliminary work was the same depth, has been placed on the floor rushed through, and 25 of the most intelligent of the bridge under the permanent way. This men to the British government. When Bishop workmen were selected to work the screws and lower the main. The circuit of the lever was marked off in quarters-one, two, three, four -and at each signal from a trumpeter stationed at the lower end, and directed by the engineer into the upper part of the reservoir, the stra- of the company, Herman Schussler, the workmen simultaneously made a quarter of the circle and then called out the number. This operation was one requiring the utmost caution, as the difference of a turn or two of the screws between any of the workmen would so unequally distribute the strain as to break the pipe. In 50 minutes, but not until the bugler had blown himself sick, and had to be placed on the retired list, the main rested in its bed, the ends were riveted, the water turned into the from the stream or well rushes up to fill, and pipe, and the feat accomplished. Sunday was selected by Mr. Schussler for the work, as on again heated, and so on, as before. The in- that day there is less water used than on week ventor claims that the consumption of fuel is days. The average daily consumption of water

it had been made.

DEADEN THE NOISE OF TRAINS. In order to add to the convenience and ment of them now by Krupp guns shows that

comfort of the street traffic under the the Turks have no longer any faith in the glants. bridge a layer of tan 9 inches thick, For some years past their number on the shore devising the construction of an automatic pho-

tographic revolver, which will take AUTOMATIC PHOTOGRAPHS OF THE SUN every hour each day of the year, from sunrise to sunset. The photographs which will be School of Mines for making taken under cloudy conditions being useless so far as "sun spots" are concerned, will be utilized for meteorological purposes, the others being kept and tabulated. The advantage of the plan is that it will dispense with an observer, and will obtain a mechanical regularity. A communication will be made very shortly to the Academy of Sciences on the invention. which was suggested by the discussion on the

the Dardanelles in 1807, for on that occasion 8 On a recently constructed railway and foot vessels were struck and nearly 100 men killed bridge in England it was found necessary to and wounded. This, it is said, was the last time they were used in action, and the replaceupon which screened ballast was laid to of the Dardanelles has been growing less, and has the effect of deadening the sound of the series of the passing trains to a very considerable extent. Seems, 42 in all of these huge weapons, and the passing trains to a very considerable extent. Seems, 42 in all of these huge weapons, and the passing trains to a very considerable extent. Seems, 42 in all of these huge weapons, and the passing trains to a very considerable extent. Seems, 42 in all of these huge weapons, and the passing trains to a very considerable extent. Seems, 42 in all of these huge weapons, and the passing trains to a very considerable extent. Seems, 42 in all of these huge weapons, and the passing trains to a very considerable extent. Seems, 42 in all of these huge weapons, and the passing trains to a very considerable extent. is carried off by box gutters and down pipes. in order to be searched; they fire likewise with We learn from Nature that Dr. Janssen is ball in answer to any ship that salutes the Castle. As this does much damage where they fall, so the lands directly opposite commonly

pay no rent." In 1845 a laboratory was founded in the Paris

TRUE ANALYSES.

of substances presented. Last year 767 analyses were made at this laboratory, chiefly of minerals and manures. A laboratory for the gratuitous analysis of medicines and articles of food would be a very useful institution in our American cities

Apropos of the fact that the Sevres mosaic works are about to be opened to the public, the following

ITEMS ABOUT MOSAIC MAKING

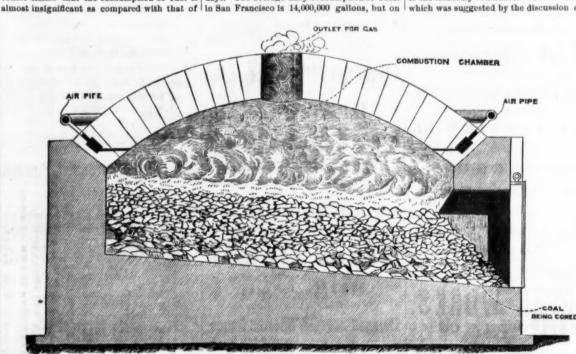
will be of interest: The art of mosaic is young in France. At Rome, where it has long been used in the reproduction of the works of old masters, no less than 10,000 different shades of enamel are kept. At the workshops in Sevres, which are not so developed as those in Rome, there are shelves and drawers fixed parallel to the walls. These drawers contain 5000 or 6000 tiny cubes of enamel or colored glass, ranged according to tint. The pattern, usually a paintng, is placed before the artist, who works in a square of cement, in which he lays his cubes in shades corresponding to the design furnished him. The Roman artist works on the same plan, but instead of whole blocks of cement and enamels a centimeter square, they use microscopically small tubes, with which they have to work hard to fill up a square centimeter a day. The design is copied with a black lead pencil on a surface prepared with white plaster; this is removed little by little, and its place supplied with cement, in which the fragments of cut enamel are placed one by one. The finer the shading the smaller the cubes of enamel.

The Scientific Press has the following item in regard to what would seem, from the description, to resemble a well borer more than a steam shovel, as "steam diggers" are called here. In a railway excavation in Scotland, one of the machines used is a digger, invented by Mr. Milroy, and which, after excavating to a depth of over 90 feet, struck the rock for the first time. In construction, and in the action of its various parts, the digger somewhat resembles an inverted umbrella, except that the connecting bars, representing the ribs of the umbrella, are swivelled and worked on points at either end. As affording some idea of the power of the machine at present in use in Glas gow, it may be mentioned that it can grasp within its "claws" three tons of material. It worked by means of an engine of 16 he power, the chain used in the operation being no less than 345 feet in length. The cylinders themselves are immense specimens of foundry work. Around the cylinder, on the inner side, weights have been placed to the extent of 280 tons, the object of arranging this enormous mass in such a position being to provide against the probability of the adjacent ground subsiding to a degree which would be highly dangerous. Boulders weighing as much as seven or eight cwt. were brought up by the digger. The clay encountered in one part was of a consistency similar to India-rubber. This kind of material being encountered to the extent of 50 feet in depth, the difficulty of the task will be readily imagined; and it speaks well for the strength and efficiency of the digger, that it has performed its work very satisfactorily, and there has not been, as far as can be ascertained. a single inch of subsidence since the contractors first commenced operations. We think the following interesting account

of an

OLD BOILER EXPLOSION

was originally presented in a paper to the " In 1868 the Master Mechanics' Association: writer was witness to an experiment that was tried for the purpose of ascertaining strange accounts of the guns, whose ugly black whether the injection of cold water on the muzzles are to be seen from the Straits, and crown sheet of a locomotive, after it was evione live shell (a shell that was fired, but did marvelous legends are told as to their terrible dent that the fluid had nearly all been converted might and distant range. Admiral Slade found into steam, would produce an explosion, and To deprive it of any power of muschief by any that some of the smaller of these guns mounted there were several practical machinists who attempt to unload it, a small 4 ounce charge of on shipboard had a very respectable range with held stubbornly to the theory that such a result their granite balls, if the charge of powder was was impossible. A temporary track was laid not too heavy, otherwise the ball was likely to along the northeast slope at Kittanning break up in the gun and produce the effect of Point, in Blair county, Pa, and a locomotive the shell being efficacions, and certainly very shrapnell. The larger guns are mounted on that had seen many years of service was (Continued on page 5.)



AITKUN'S HOT AND COLD BLAST COKING OVEN.

thor also describes a modification of his appar atus adapted to be run by the heat of the sun, in which case the only expense is that of wear and tear, which is small, there being no moving

There was accomplished in San Francisco on the 18th instant,

AN ENGINEERING PRAT

which is creditable to the gentlemen under whose direction it was performed. Owing to a change of the Mission street grade it was necessary to lower some 26 inches one of the great mains of the Spring Valley Water Company. The pipe is 22 inches in diameter, and supplies the entire southern and southwestern part of if thrown in a bottle containing the crystals. the city. It is made of wrought iron, and weighs nearly 60 pounds to the foot, making the weight of the whole in the vicinity of 60,000 pounds. On the afternoon of the 17th, a force of about 100 men were set to work to uncover the pipe line and dig a trench under it to the required depth. As the work progressed heavy joists were placed across the trench at distances of 40 feet, and the pipe suspended by means of heavy screws resting on the joists. At an early hour on the morning of the 18th work was renewed, and about 10 o'clock, everything being in readiness, an order was transmitted by tele graph to San Andreas, whence the supply is drawn, to shut off water. Simultaneously with this order others of a similar nature were issued to men stationed at the connection of the pipe with that of the Market street line, so as to keep the water from backing into the lower end of the pipe. In 20 minutes the water-gauge showed a reduction in the pressure from over 70 pounds to seven, and ten minutes later the gauge showed that all the pressure was gone and the pipe free of water. In order, however, to keep up the pressure on distributing pipes, and supply about half the city with water otherwise it would suffer a water famine while the work was in progress-water was turned in from the Lake Honda reservoir through the Market, and the pressure on this line increased. and that the same is true of petroleum and Owing to some little delay, occasioned by the

Chemist, has the following

LABORATORY NOTES,

Hard rubber or vulcanite, placed for several

like leather, and easily broken The vapor of chloral hydrate is a solvent of

celulose. I have found the corks of bottles containing the crystals eaten away to the depth of a quarter of an inch, the cork being resolved into a black semi-liquid. Certain kinds of tissue paper are partially dissolved in time,

A very difficult substance to dissolve is gum copal. I have found that analine oil dissolves it with great facility.

Hyposulphite of soda is apparently soluble to a considerable extent in spirits of turpentine. Large crystals of "hypo" melt down to a liquid after several weeks, and if the bottle be shaken, partially disappear. The turpentine smell early disappears.

If to a solution of bisulphide of carbon there be added twice its bulk of potassic hydrate in sticks, and the bottle be well sealed, the whole will in two months, become an intense red- interesting history of these guns, the supply of dish, syrupy liquid, with scarcely any free bisulphide of earbon.

At some recent artillery experiments in England the following novel method of

DRAWING THE CHARGE OF A SHELL was employed: Four hundred and one rounds were fired during the experiments. At the close, not explode), a 180 pounder-lay on the beach. gun cotton was placed on top of the shell and exploded, cracking the shell without exploding large main that runs down Haight street to the powder within; the operation of breaking prudent. We fancy a shell so dignified in its water. The apparatus consists substantially of water-gates not being completely shut, and the behavior under the circumstances would have carriages, yet they certainly did some damage

a steam pump of the same capacity. The au- | Sundays it seldom exceeds 10,000,000 gallons. | transit of "Vulcan." When completed, it is T. A. Edison, in an article in the American proposed to set the instrument at work in the physical observatory of Dr. Janssen.

While the Russians are strengthening their which are of much interest, and may be found works at Odessa with Krupp guus, the Turks are, it seems, substituting the same modern weapons for the big cannon which for ages past weeks in nitrobenzol, becomes soft and pliable bave watched the Straits of the Dardanelles. Bigger than the biggest "Woolwich Infant, or the 100 ton gun of the Italians, these ancient cannon still retain their former position as

OLD GIANTS OF ORDNANCE.

the caliber of the largest being something like 29 inches, while, as our readers may remember, that of the Anglo Italian weapon is but 17. According to one of the best authorities on the subject, Major General Lefroy, R. A., the present governor of Bermuda, these monster cannon were cast as long ago as the fifteenth and sixteenth centuries, and are fashioned entirely of bronze. The cannon balls provided are of stone, and far from being useless and unmanageable as one might well suppose such gigantic firearms to be, they have, it appears, several times been made use of with considerable effect. The vapors of todine, in the course of several Some of the weapons were employed against months, will penetrate deeply into lumps of Scutari, in Albani, by Muhammad II, in 1478, and we are told that during the siege of that place, from June 22 to July 21, no fewer than 2534 huge cannon balls were hurled against the town. As General Lefroy has remarked, in his powder necessary to have carried on such a terrible bombardment must have been immense, while the quarrying and cutting of so many monster stone projectiles is a task scarcely to be realized in these days. Travelers have given shore and not fitted with properly traversing run into a distance of perhaps half a mile, Metals.

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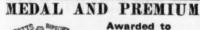
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By this process oxygen is imparted to the blast simply by its passage, on its way to the place of combustion, through a chamber or vessel holding an oxygen compound, from which, by the agitation of the air thereon, oxygen is set free and thus imparted to the clast. The required volume of this blast is one-half less. The combustion becomes perfect therefrom, all the carbon in the fuel being converted into a high and concentrated heat, without smeke or gas, but that of carbonic acid, being formed. Beside a saving of fuel, obtainable in all causes by this blust, advantages arise from it varying according to the appliance of the heat.—On Forge Fires it gives a clean and intense heat, free from all sulphurous gas, whereby a better and quicker welding is had and time saved. On fires under boilers for making steam, the saving in fuel is 25 per cent, and over, the wayking cannelly can be increased in same ratio by reason of the intensified one care. cent. and over, the working capacity can be increased in same ratio by reason of the intensified and accel cent. and over, the working capacity can be increased in same ratio by reason of the intensited and accelerated combustion, which latter also overcomes the disandvantages connected with the use of fine dust and impure cent. Castings from a cupols in which the fire is sustained by this blast become of superior quality, uniformly soft to work and very tough, resembling wrought from and sieely they forge hot and cold to some extent; the from becomes strengthened and purified, being freed from carbon and sulphur. For blast furnaces this process becomes of vast importance—it saves fuel, increases the workacity, perfects and reduces the cost of the metal, makes sulphurous and other impure ores fit for ing capacity, perfects and reduces the cost of the metal, makes sulphurous and other impure ores fit for use. The serious drawbacks arising front imperfect combustion, caused mainly by otherwise uncontrollable at mospheric influences, are overcome. The work of a pudding furnice and that of decarbonizing the iron, both for wrought iron and sicel purposes generally, is much simplified, shortened and porfected as to purity of product: the work of so many hours is reduced to as many minutes by this process. The process has the merit of being simple and easily applied, and with but very little expense, and this only for the needed chamber or vessel and its connection with the blast pine; the vessel may be a wooden keg, barrel or larger cask or tank, properly lined, from two gallons for a single forge fre up to 500 gallons and over, according to the blast in use. The cost of the exygen is conditioned by, and made subject to, its effect—it is but a small tem compared to the gallon from it. Although this process has been in practical use for over a year, the inventor felt reluctant to offer it to the public before having its utility and practicability fully established, beyond any and all contingencies, not from a theoretical standpoint, but from the testimony of manufacturers who have used the process this last year, and whose standing and reputation facturers are of the highest order, and such as to easitle them to the consideration of out further information, and for small specimens of castings from this process, address

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Mr. Dillwyn Smith, No. 18 South Sixth street, Philadelphia, is the inventor of a very useful device known as an automatic stoker. In the firing of furnaces of every kind, it has been found that by the frequent addition and even distribution of fuel it is possible to so regulate the amount of air admitted that a very perfect combustion is secured, whereas with unequal and injudicious stoking it is almost, if not quite, impossible to prevent the formation of large volumes of carbonic oxide, which pass off unconsumed, as well as setting free a good deal of solid carbon, which passes off with the vapor of water as smoke. The extraordinary economy of fuel realized in some of the competitive trials of portable engines in England has been secured chiefly by good firing. Almost as generic name is desirable, it is by no means a great a percentage of fuel saving can be accompanied. plished with any furnace and boiler with equal skill and judgment in firing, but the vigilance, swiftness of motion, and promptness of perception needed, make the labor very exhausting, and enables the skilled stoker to command wages so high as to reduce by a considerable percentage the economy resulting from the saving in fuel.

On page 16 of our issue of Oct. 26, 1875, we published a very complete description of the a trial made with these stokers on the English steamer Lisbonense, of which the following is a condensed statement:

-	\$78 6 0	619 tons Lanca- shire Slack, at 14/9; 87 tons of South Wales.	Automatic Stoker.	11 Ъ.	08 d.	Liverpool to Maran- ham and back.
20 00 1	£ 8. d.	624 tons of South Wales at 28/.	By Hand.	13 h.	53 d.	Liverpool to Maran- ham and back
8	Cost.	Coal Comsumed.	Firing.	Steam.	Under Steam.	Ports.

The Lisbonense is an iron steamer of 2000 tons burden, having compound engines, supplied by steam from two boilers, four furnaces, each fired fore and aft.

The two voyages compared above were made under very similar circumstances. On the voyage out, with the automatic stokers, the vesnel made average speed against a fresh head wind, with only four furnaces in use instead of eight. The homeward passage was the quickest she ever made, although using but six furnaces, and showing diminished consumption of fuel on this vessel have now been in use for two years, and have not as yet needed any repair.

Since the above test was made, slack at 8/6 per ton has been used on the Lisbonense, and her owners have ordered more of their steamers to be fitted with the automatic stokers.

The value of the stoker upon steamers running in southern waters would be very great, an exact definition of the word "steel?" By even if the saving of fuel was not such a great inducement to put them in. During the lost ingot iron and ingot steel is as indefinite as summer the temperature of the stoke holes of that which formerly existed between wrought steamers in and about New York barbor was something frightful. In one ship it was re- utterly falled to bring about a sharp and disported at 130°, and temperatures of from 115° tinet classification among the iron compounds, southern waters the stoke holes are described, with more truth than poetry, as floating hells. By the use of the mechanical stoker the men are relieved from working in such frightful temperatures, and an enormous gain both in boiler power and fuel is made at the same time.

The New Nomenclature.

The opinions we expressed respecting the proposed new nomenciature of iron and steel compounds are already being echoed by the foreign technical journals. We supposed that the new names would meet with general approval in Germany, but from a communication to the Berg. u. Huetten. Zeitung, of December 1st, by Dr. Adolph Smidt, of Heidelberg, we conclude that such is not the case. We translate from Dr. Smidt's paper as follows:

Turning to the names of the members, well knowing their former openly expressed opinions on this subject, we find that the advocates of the so-called "new definition" of steel were certainly in the minority. It is, therefore, not astonishing that the new definition was not fully indorsed by the resolutions of the board. But the report, nevertheless, has the appearance of a compromise between the opinions of the minority and majority.

The opinions of the new definitionists were probably, on account of international polite- from his having had no sleep to speak of for a ness, permitted to exercise a certain influence week, his last trip having been 23 hours long. in the preliminary part of the report, but were He had not taken off his clothes for seven days. rigidly expunged from the propositions. This Punch's plan might be enlarged so as to keep explains the incongruity we find between the the director awake as long as the brakeman is preamble and the resolutions. In the first, awake, and to keep the director's clothes on as steel is defined as "a metal possessing homolong as the brakeman's clothes. This would geneity due to fusion," while in the latter all make all things even and save life.

iron compounds which are capable of being hardened are given the name of steel.

From the above mentioned cause arises the want of conformity observable between the preliminary part of the report and the resolu-

1. In one of my former articles I called attention to the fact that the iron compounds. known under the name of Bessemer or Martin steel, which, excelling through their greater ductility and natural bardness, as well as their more granular texture, many other steel compounds, should certainly have some claims to the name of steel, even though they cannot be hardened or tempered, and could be easily distinguished by the addition of Bessemer or Martin steel as intermediary and indefinite from compounds. We see from this that even if a

2. It has been proved that up to within a few years the word steel had a very definite meaning, which was recognized by all theorists and metallurgists; and the now reigning confusion is mostly attributable to the advocates of the new nomenclature.

The nomenclature hitherto used was much alike in the different commercial languages. If not quite the same in expression, there was a close correspondence in meening. It has been mechanical stoker, to which we refer our read- my desire to prove in my former lecture, at ers. Since that time we have the particulars of great length, that a technical definition of steel. which by its exactness would prevent all disagreements and litigation, could not now be made

> 3. The preamble, apparently being added as a concession to the minority, stands in direct contradiction with the propositions which follow.

Homogeneity is an expression which of late has usurped the place of the older and far better expression of granular The meaning desired to be conveyed is, that fractures in different directions should show the same internal structure, which is far better expressed by the word granular than by homogeneous; the latter term, as commonly used, designates a body which in each and every one of its fractures shows a uniform composition, yet the different fractures may have a different texture. Uniform texture by no means excludes a fibrous one. A fibrous piece of wood or iron may be homogeneous. If we take a bundle of fine steel bar, so composed that we have alternately a coarse and a fine grained bar, welding the different bars together we obtain a compound which is neither homogeneous chemically, nor shows in its fracture a homogeneous texture, yet the same is undoubtedly steel. But this product is under all circumstances of a granular texture, the latter term designating more correctly, therefore, the peculiar structure of steel.

The committee in forming their propositions have gone to work with laudable caution, and the same have, on the whole, a conservative tendency.

The terms used in the first, second and fourth recommendations of the committee are based on the usual classifications of iron compounds, yet the utility of changes like the following appear very doubtful:

Wrought iron into weld iron. Puddle steel into weld steel. Cast steel into ingot steel.

Yet these new expressions, compared with that suggested in the third proposition, have their good side.

Proposition 3 embodies the principal point of the report of the commission. compared with the voyage out. The machines iron compounds, which do not permit of hardening at red heat, are classified under the generic name of ingot fron, an expression quite well chosen if manufacturers or dealers could be brought to use it.

What would be gained by accepting the propositions of the commission? Would we have an exact classification of iron compounds, or no means. The distinction drawn between iron and steel. The propositions offered have oward were reported as common. At sea in which certainly abould have been their principal aim. Disagreements and litigations would by no means be prevented by the introduction of the new terms.

In view of these facts it appears to me useless to attempt a change for the better in the existing and commonly satisfactory nomenclature of iron compounds. Such changes, if not gradually attempted, always lead to misconceptions, the effect of which nobody is able to foresee

The fact that this commission, consisting of the most prominent authorities in this matter from six different industrial countries, have not been able to draw a sharp line of distinction between wrought iron and steel, plainly proves, if proof is needed, that this question will ever remain unsolved.

For the earnest attempt, however, and it is hoped for the final rejection of the so-called new nomenclature, the international commission, as well as the American Institute of Mining Engineers, will merit the warmest thanks of all interested in the matter.

Punch's plan to prevent accidents was to tie a director on the locomotive, but It must be modified to fit the latest case. A brakeman, who has been arrested on a charge of manslaughter, testifies that the negligence which brought on an accident and loss of life resulted

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number of interested gentlemen retired to the

safe side of the filling at Horseshoe Bend,

where such as were in possession of field glasses

could see plainly the indicator or steam gauge

The hand on the dial moved slowly around

until an immense pressure of steam was visible,

and it was concluded beyond a doubt that the

crown sheet must be red-hot, while at the same

time a terrible volume of compressed steam

was in the boiler. Then came the moment when

practical test was to be made. A steam engine

had been brought up from Altoona, and a hose

connection made in such way as to force water into the boiler at the proper time-the bluff

sheltering those who were operating the ma-

chine, so that no casualty might happen. At a

given signal the injection was made, but no ex-

plosion followed, and the hand on the dial

plate rapidly receded until not a pound of

steam was visible. This was the result of the

first experiment, and the theorists who did not

believe in explosions from this cause considered

it a vindication of their ideas. But a second at-

tempt was made a few days later to explode the

ame boiler under the same circumstances. As

the indicator moved around the interest became

intense, but just as what was considered the

proper pressure was arrived at there came a ter

rific noise, and a chaotic mass of iron went whist-

ling through the air. The frame work and run-

ning gear of the locomotive were thrown down

the embankment some 60 feet, while portions of

the dome and boiler have not been found to this

day. It was an interesting experiment, but,

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A GREAT GRAIN ELEVATOR.

which possesses many features of general interest. It contains 286 bins for grain, varying in

capacity from 1500 to 8000 bushels; total capac-

ity, 1,500,000 bushels. It has 20 lifting elevators

each capable of hoisting 100 bushels per minute

and can unload a car from 31/4 to 4 minutes. There are three tracks extending the whole

length of the building, each holding 11 cars

without uncoupling. Each car will stand op-posite an elevator. The capacity of the cars

800 bushels. The grain will pass from the car

to the weighing room at the top of the build-

spouted for shipment to one of the elevators,

carried to the top of the building, reweighed,

renovated, if necessary, and then passes di-

rectly into the ship, barge, bags or cars, as may

be required. The motive power is supplied by

two double acting engines of 300 horse-power

each. They are supplied with the Grueniger

cut-off. The foundation of the building rests

upon 5500 immense piles, varying in length from 70 to 90 feet. From these are laid three

courses of timber two feet thick, and upon

these a solid granite wall, with a solid granite

pler under each support. From the timber foundation to the support of the main wall is

ten feet. The main wall is two feet thick, of

brick, laid in cement, and carried up 27 feet. At the hight of 16 feet there is

a floor. On this floor all of the

city work of the elevator will be done.

There are numerous conveyors for carrying for

pags to either side of the building, and all the

pagging will be done here. Seven feet above

this floor is the second floor, which forms the

bottom of the barge grain bins. These vary in

depth from 60 to 70 feet. Surmounting these

bins is the tower of the main building, contain-

ing all the machinery. There are 22 18-ton scales connected with the weighing hoppers,

cleaning apparatus, etc. Each elevator is inde-

pendent of the rest, and can be stopped and started at will by the operator. Each has its

fire apparatus complete. In all, there are in the

building over two miles of spouts for leading

the grain to the different bins and to the boats.

ering capacity being estimated at 33,000 bushels per hour. The shafting to which the ele-

vators are geared is in the upper story of the

tower, and is in continuous lengths of 350 feet,

one on each side of the building. There are

speaking and dispatch tubes to the top of the

tower, and also a passenger elevator for the

whole hight of the building. The working of

this building has been intrusted to Mr. George

J. Whitney, who has leased it from the railroad

A Russian engineer has made some interest-

EXPERIMENTS IN STEEL MANUFACTURE

company.

substantially, it proved nothing.

River, in this city,

Fron.

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Wood Bros.' Charcoal Blooms & Billets Virginia Bessemer Ore Co. H. L. GREGG & CO.,

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BEST QUALITY.

Their location, coupled with every known improvement in machinery and process of manufacture nable them to other Ruls, when quality is conducted, at lowest market rates. The long experience of the present Managers, the Company, and the enviable reputation sey have established for "CAMBRIA HAILS," re deemed a sufficient guarantee that purchasers can, all times depend upon receiving rails unsurpassed or strength and wear by any others of American or return make. Any of the usual patterns of rails in be supplied on short notice, and new paterns of estrable weight or design will be made to order address.

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The earlier a chill or scaffold is operated upon after its formation, the more rapidly will its reduction ecomplished; but the entire removal of the lump, even after it may have become cold, can be effected our process very much quicker and cheaper than by blasting.

Yours, respectfully. FOOTE & MCNULTY.

(Continued from page 1.) Fron. Scientific and Technical Notes.

J. & J. Rogers Iron Co., where the test was to be made. In the furnace a roaring fire was built, and a large

AUSABLE FORKS.

FINE CHARCOAL Blooms & Bars

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Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs

which are said to be important. Mr. Chernoff, the gentleman in question, published lately at St. Petersburg a pamphlet on the whole subject, and Mr. Anderson, of the Erith Iron Works, has ably translated it into English. The author states that "if steel melted in a crucible is constantly kept in violent agitation while cooling-agitation violent enough to is allowed to cool in perfect quiet, then the re-

keep all its particles in motion-then the cold ingot produced will have a very finely crystallized structure; if, on the other hand, the steel sulting casting will consist of large, well developed crystals. The appearance of these crystals, and generally the tendency to crystallize under such circumstances, will depend on the purity of the steel." Starting from this remarkable, but apparently well established base, Mr. Chernoff concludes that liquid steel really obeys all the laws which regulate the crystallization of fluids. It is probable that chemists, at least, will agree to the truth of this deduction, for they know that if they wish to obtain

in perfect quiet. The author of the pamphlet man, at the age of 23, he was making \$4000 a asserts, too, that in the course of his long continued series of experiments he has discovered that steel, when heated above a certain temperature, as to a dark cherry red, loses its crystalline structure and becomes amorphous. If, again, from this point it be allowed to cool undisturbed, it will become once more crystalline. unless it be hammered during the evolvement of heat from it, when its fracture will exhibit its amorphous tendencies once more, and present a fine silky texture. We commend these lines on the Hudson River, the Sound and elsefacts of Mr. Chernoff to the notice of the steel makers generally of this country. From that gentleman's statements it appears that he has travel too expensive to be enjoyed by the many, devoted many years of studious labor to an elucidation of the numerous occult causes which have rendered steel so difficult a substance to deal with, and it is certain that his exertions passengers with the best and cheapest accomhave not been misapplied.

The lamp which we illustrate herewith is one recently got up by the White Manufacturing lighting mills, stables, mines, and all such work where a powerful light is required. Very lately Orleans to be used in lighting up the levees. The lamp is intended to burn kerosene with a supply of oil, which is essential in obtaining a steady, brilliant light. A great many of these



is for wheat 450; for corn, 500, and for oats, lamps have been sold for use in mining lead and coal, and many of them are used in the mines of Utah. They have been found very ing, and each car load will be weighed at one serviceable on street and other railways. draught. It is spouted from the weighing hopper direct to bin. From the bin it is

By adapting this lamp to the use of livery carriages a want has been supplied which has long been felt but never before, we believe, been supplied. The company also manufac ture dark and hunting lamps, which are very popular on account of their satisfactory operation. Fire engine and hose carriage lamps and lanterns are also manufactured by them, and have a very good record, being in use in slmost every large city in America. The illustration shows a side view of the lantern, together with the clamp for holding it.

Cornelius Vanderbilt.

The venerable Commodore Vanderbilt died at his residence in this city on the 3d instant. As is well known, he has been alling for some time past with a complication of complaints, which finally took the form of general debility. The fatal result, therefore, was not wholly unexpected by his family and attending physicians. He remained perfectly conscious to the last moment of his life, and died almost without a struggle. At 4 o'clock Thursday morning his condition became rapidly worse, and he expressed a desire to see the Rev. Dr. Deems. his spiritual adviser. The latter arrived in a few minutes, and Commodore Vanderbilt said, "I think I am nearly gone, Doctor." Dr. Deems prayed by the bedside of the dying man, and present sang a few hymns in low tones. The music seemed to soothe the sufferer. All his family were sent for during the night, and when he died they were by his bedside. His It is calculated that some six or seven boats may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once, the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be loaded at once of the receiving and delivation may be a supplied to the receiving and delivation may be a supplied to the receiving and delivation may be a supplied to the receiving and delivat his daughters were present, and his wife, who is stated that this belting cannot be equaled has been present by his bedside dur- by any yet introduced for strength and durabiling the entire period of his sickness, was at ity for heavy work when used upon large her post, as usual. Doctors Lindsley and El- drums such as main driving. The thickness of liott were also in attendance. They warned the walrus hide is from half inch to 11/4 inches, both Commodore Vanderbilt and his friends to so that belts of that substance can be made of expect the worst. The news of his death all solid leather, and the fibers thereof being spread rapidly, and the members of his family longer than any other hide used in strap makwho were not present were at once informed by ing, it is remarkably tough and lasting. There telegraph of the sad intelligence. Very many are walrus hide belts in this country which are friends called at the house during the morning still running, and which have been in constant and sympathized with the mourners. Cornelius use as main driving belts in forges, saw mills Vanderbilt, Jr., arrived just before his father and other large works for 15, 18 and 20 years, died. The funeral took place on Sunday morn- yet they are in good running order, and giving ing, at 10.30 o'clock.

Deceased was born on Staten Island, N. Y., May 27, 1794. His father having established a strain takes place on the outside lap of the belt, ferry between New York and Staten Island, which, of course, cannot be the case with the young Cornelius had much to do with its man- walrus hide belt, owing to its being of one agement. For some five years he was engaged thickness only. It is remarked, moreover, that as boatman, carrying pleasure parties to picnics, they run very slack, and do not require to be boarding ships, &c.; no matter how it blew, or stormed, or froze, if "Corneil" had agreed bite on the drum is marvelous. For example, to board a ship or deliver a dispatch, he did it. a 14 such belt 90 feet long will drive 100 horse-When about 16 years of age, he became the power with great ease. Mr. March is now havowner of a boat and commenced an independent career, and by the time he was 18 he driving; they are made in lengths of from 6 found himself part owner and captain of feet to 9 feet, the joints being cemented and one of the largest pirogues in the harbor. put under great pressure for 48 hours, and then During the war of 1812, he rendered material service in furnishing supplies, by night, to the and riveted with extra strong copper rivets, service in furnishing supplies, by night, to the forts about New York. In fact, his energy, skill and daring became so well known, and his word, when he gave it, could be relied upon so implicitly that "Corneil, the boatman," as he was familiarly called, was sought after far and near when an expedition particularly hazardous though how long this will last cannot be determined. near when an expedition particularly hazardous though how long this will last caunot be detercrystals from a solution the latter must be kept or important was to be undertaken. As boat mined.

year, but perceiving steam would ere long be come the great agent of navigation, he in 1817 entered the service of Thomas Gibbons, then proprietor of a line of steamboats running between New York and Philadelphia, remaining in his employ 12 years. Having made himself thoroughly acquainted with the details and practical management of steam navigation, he in 1829 left the employ of Mr. Gibbons and set himself to work establishing steamboat where, in opposition to corporations and companies who, having a monopoly of trade, made His plan was always to build better and faster boats than his competitors, to run them at modations. For the next 20 years he applied himself to the work before him with the same wisdom, and that earnest, steadfast zeal he had ever shown, and was eminently successful. In Co., of Bridgeport, Conn., and is intended for 1849 he obtained a grant from the Nicaraguan government to construct a ship canal from the Atlantic to the Pacific, by the Son Juan River 50 of these lamps have been sent to New and Lake Nicaragua, but after spending considerable money in this enterprise it was abandoned, and the Nicaragua Trausit Company chimney, and is provided with a fountain was organized and Mr. Vanderbilt was chosen burner, so that the burner always has an even president. Under his management this route president. Under his management this route to California became a favorite one, and the price of passage was reduced from \$600 to \$300. In 1853 he sold out his interest, and in 1855 established an independent line to Havre. The famous steamboat "Vanderbilt" was built for this line, and made the quickest time or record. Mr. Vanderbilt made a free gift of this splendid vessel to the United States government in 1862, at a time when the administration needed immediately a large addition to the navy. In 1865 he sold out all his vessels and transferred the greater part of his wealth to railroads, and he subsequently became the largest railroad proprietor in the United States. It was never his plan to put away money in a chest, nor yet to simply invest it, but rather, in the fullest sense of the word, to use it. Consequently, it is said, he employed more men, directly and indirectly, than any other man in the

> By those most familiar with Mr. Vanderbilt's operations, and who have been intimately connected with him socially, his principal investments in securities are estimated as fol-

> N. Y. Central and Hudson River stock \$55,000,060 bonds... 10,000,000 Lake Shore and Mich. Southern stock. 40,000 shares, say.
> Western Union Tel., stock and bonds.
> Harlem Railroad, stock and bonds.
> N. Y. and New Haven Railroad stock...
> Canada Southern Railroad bonds, estimated value. 2,200,000

2.000.000 \$85,450,000

Beside this property, Mr. Vanderbilt owned a onsiderable amount of real estate. In this city his house in East Washington Place is estimated to be worth about \$48,000; and his office, stable and adjoining houses on Fourth street, comprising four tenements, \$51,000. His other city property is situated and valued as follows Bowling Green, \$27,000; Courtlandt street, \$32,000; Twenty-second street, \$18,000. Mr. Vanderbilt has been also credited with owning what is now known as Gilmore's Garden, the Hippodrome property on Fourth avenue, but it is assessed in the name of the Harlem Railroad Company. His personal estate for 1876 was assessed at \$3,000,000. On Staten Island he owns a park and hotel worth \$200,000, and several thousand acres of wild land situated on the line of the railroad back of the old village of Clifton. This property occupies one of the most desirable positions on Staten Island, and its neglected condition, owing to the fact that Vanderbilt would neither sell nor allow any improvement to be made on it, has greatly interfered with the prosperity of the neighborhood. The Church of the Strangers (Dr. Deems') is worth \$50,000. Dr. Deems has a then some members of the family who were like lease of it, but on his death it will revert to the Vanderbilt estate, unless other provision is made in his will.

> Walrus Hide Belting .- Mr. Joseph the utmost satisfaction. It is frequently observed that in ordinary double belting a great ing six 8 inch belts finished for a firm for main sewn with half inch laces one-eighth inch thick,

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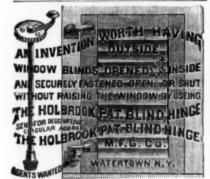
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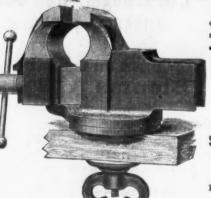
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have been commenced against said Imhenser & Co., for selling clocks contrary to the stand especially the clock with a series of springs in the cover, and marked "Platein All persons discovered using these intringing clocks will be dealt with according to law.

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tion than a hollow pintal. It has broad, solid bearings in the knuckle, which do not wear down readily and let the door saz. It is Fast Joint, therefore can be used for either right or left hand. By actual test it has an average of 50 per cent. more power than other Spring Hiages in common use of same size. Fine Castings a Specialty. NEW BRITAIN, CONN. Warehouse

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Made Right Handed when so ordered. Iron Corn Sheller

Is acknowledged by all who have used it to be the Best Hand Corn Sheller Made. These facts are attested by over 20,- built across the hearth, resting upon the lump 000 Farmers who have bought and used them. For terms and Prices, address,

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In Competition with the World, at Philadelphia, 1876.

TWO FIRST MEDALS, and TWO DIPLOMAS OF MERIT

The following are the points that the Judges officially announce as the basis of their award of the highest honors to the Howe Scales: For their Protected Bearings (the Howe is the only Scale with protected bearings), which makes the Scale DURABLY ACCURATE.

For their Strength.
For their Simplicity.
For their economy in construction.
For their economy in construction.
For their first-rate material and workmanship.
For their various original improvements and adaptations (which being patented are exclusively possessed by the HOWE).

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BRANDON MFG. COMPANY, of Brandon, Vt., ensue in cleaning method will soon things of the past.

Are Guaranteed Superior to all others.

For Plans, Prices and other information, address,

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PACE & CO., - 3 Park Place, New York City. 63 Wood St., Pittsburgh.

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Blast Furnaces.

BY HENRY B. FOOTE, CONTRACTING ENGINEER AND MANAGER.

(Concluded.)

Commencing at the bottom with the blowpipe through the tapping hole the hearth was cleaned out as high as the tuveres. Removing the tuyeres, inserting other pipes and working upward, with bars underneath the scaffold, the entire mass was brought down, and almost every portion of it taken out. Time consumed ommencing the removal, 36 hours.

On the 31st of January the casting house, low modern structure, caught fire and was onsumed, causing several weeks delay.

In resuming operations the blast was continued from Monday until Thursday 6 p. m., when the furnace was stopped up, and the twelve hours' make of iron left in the hearth. The furnace kept full of stock was allowed

to stand one week, and on opening was found

filled up with iron to the hight of the tuyeres, 2 feet 6 inches, with a mass of cinder lying above. The lump was apparently solid; no ommunication between the bottom of the hearth and the top of the mass could be deand a real fight with a large mass of cold fron in the bottom of a hearth was comm hand. After getting well under way we were obliged to stop for some hours on account of a leaking boiler, and to repair a slight accident more scientific meu. to the engine. Notwithstanding these delays, and some other annoyances, the main business progressed favorably, and furnished that experience that was so much desired. Commenc ing at the bottom, through the tapping hole as before, the iron soon began to come away, and in a few hours we had cut a passage upward so as to obtain communication with the ciuder notch. Inserting another pipe through the notch we got the lump under a cross fire, and the refractory mass began to flow away in streams under the tremendous power of the carbohydro oxygen blow-pipe fire. The work was continued, and the molten mass not work. The too cold theory seemed to be withdrawn as fast as it collected on the bottom. The mass outside accumulated so fast that it soon became evident that the lump must be increasing in bulk, as our pile outside was the minutes, and in some cases an hour at a time argest. An examination of the top showed a settling down of the stock. We were not only but the stack was all clean. We then brought cutting away the lump, but also meeting the the temperature up by increasing the fuel and new stock by means of a passage-way that had recovering our ground. We had a narrow esbeen made upward on the back side of the cape from a chill, but no scaffold. We then hearth to the right; attempts to close this passage by means of fire-clay were only partially uccessful. Here was a real obstacle, and the ossibility of a failure became apparent. Several expedients were tried, too numerous to not work. Try again. A furnace scaffolds bedetail, but unsuccessful, for the lump being very hot it was determined to try if the make of new iron would not aid or complete the reduction. Having more than half of the capacity of the crucible free it was thought that the trial was worth making. It was a mistake. The application of the blast filled up the hearth again, and our last condition was not any better, if not worse, than the first. Commencing again at the bottom and working upward, again stopping up any communication formed, we had reduced a large portion of the metal when a plan suggested itself that seemed to promise entire success. The fire was withdrawn, the stoppers removed, and the tuyeres raised five inches higher, the blast turned on, and again the hearth filled up as high as the tuyeres. The tuyeres were then removed, the breast of the tuyeres (tuyere blocks) taken out, the stock stoppered back coal of the additional charges to keep the top with large bales of fire-clay, and a bridge, composed of fire-clay, ground fire-brick and loug cupola circulars (selected for the purpose), was direction in the lines commences. The furnace and completely separating it from stock. The furnace was again well stoppered, and the work the top fillers. Now to determine the nature of reduction recommenced, applying all the of the product of ore melted with lime-that is, entire mass of chilled iron was removed, the a small furnace five feet high, twenty-two bridge thrown down and taken out piecemeal inches in diameter, with boshes and cruciick except as before stated. In the erection of the furnace we used for lining the hearth blow-pipe flame to fuse it. The product was a common cupola circulars, made of a bad qual-

low out and reline. Subsequently the last experiment was re peated in substantially the same manner, but not on so large a scale, to determine if we were entirely right, and if any improvement in the construction of the bridge was necessary. The gan to give way, and in a few hours the furresult was equally as satisfactory, the work being performed by one keeper, a helper and one

ity of New Jersey clay, and from the severe

In the foregoing demonstration an effort was made to get the furnace in as bad condition as pensive, and as we had succeeded in the for possible, in order that we might determine what could be accomplished in extreme cases and I believe every furnaceman will say that all that was desired for present purposes, and the method followed to scaffold and bung up, and then to form a salamander of the very worst type, was as honest and severe as any that could have been adopted. The entire success resulting from determined perseverance any emergency, and that the rumous losses that

Chills, Scaffolds and Salamanders in attention and admiration to much that has the worse is taking place, indicating trouble, a been said. But none of the information obtained has been sufficiently positive and reliable loss of money, that the dauger can be arrested to enable me to scaffold a furnace, or to cause at once without jeopardizing the safety of the formation of a scaffold at pleasure.

To be sure, this may appear as a class of knowledge that one had better be without. If again, to be sure there was no source for error a furnace manager has learned how he had bet- or possibility of failure, and have found that a ter forget it as soon as possible, for fear he might make use of it at the wrong time. Yet it seems sensible that while in pursuit of minutes, manifested by an increased bright-knowledge, and particularly knowledge that is to be based upon demonstrable proofs, that it is best to acquire all the information possi-

In course of the experiments at the Essex Furnace, in order to complete all that was undertaken, it became necessary to cause the formation of a scaffold with a fair quality of stock, such as would make good iron, with proportions and charges as fair and honest as in the pursuance of regular business, in order that the occurrence should be as near that which takes place in the accidental formation as possible.

How will you do it? This was a difficult question to answer, and the undertaking was equally difficult to accomplish. Abandoning tected. The blow-pipe fire was again applied, all pretensions as to having discovered the true cause, and being in search of practical rather than theoretical knowledge, I can simply re-This was the first real work we had had in cord our experience, and submit the explanation as it presented itself to us, and will leave it to the discussion and correction of abler and

> Among the many reasons given for the formation of a scaffold, I have heard it said by one, "because the furnace is too cold;" by another, "because it was too hot;" by another, "because of a change in the quality of the stock;" by another, equally wise, "be-cause the 'devil was in it," and that was all

the reason that could be given. We tried for two weeks to make the furnace scaffold without chilling or bunging up, by reducing the proportion of fuel, making very hard Iron and giving the little stack all the labor she could stagger under. This pian did at fault. We resorted to all known means to reduce the temperature as much as possible. after blowing through the cinder notch thirty The cinder was black enough and bad enough, tried this theory: A furnace scaffolds because she is too hot and is making iron too high upnot true, because a hot top is not followed by scaffolding as a general thing. This plan did cause a portion of the ore is melted before it is smelted-that is, before the metal will separate from the gangue and run, and before the car bide of Iron is formed, because the stock is too coarse; the hearth and boshes too open, thereby allowing the strong currents of heat to pen etrate too high, melting the ore before it is properly deoxidized and sufficiently carburized to remain liquid, and as it shifts from the hot current that caused its fusion to a cooler one. it chills instantly and adheres to the lining. The furnace is both too hot and too cold to make a fine point of it. To test this theory we adopted the following method: We screened and raked out all the small coal and fine ore. Using oyster shells for fluxing, we charged the furnace in the usual manner. Waiting until the new charge run down, we increased the speed and pressure of the blast; wetting the cool, the result was obtained-the scaffold just at the top of the boshes where the change of being small and low, she was disposed to work hot on top, so as to make it uncomfortable for ower at our command. Within 48 hours the not smelted-with circular fire-brick we erected lwed and when well heated applied the heavy black, stinking mass, without the sepaphysical aspect identical with the pieces of the scaffold that we had secured.

To relieve the furnace of the scaffold we had formed was the work of only a short time Inserting the blow pipe underneath, it soon be nace was all clear again and put to regular work. It might have been desirable to have continued these investigations further, but the acquisition of this class of knowledge is exmation and had obtained the requisite practice in removing a scaffold, we had accomplished regarding the successful treatment as the important object to be sought for, we leave the causes for the investigation of others.

The presentation of tangible philosophical dogmas has not appeared as important as the fully warrants the announcement that a method discovery of a positive, a reliable, speedy, has been found which is reliable and equal to effectual course of treatment that will perform any emergency, and that the rumous losses that ensue in cleaning out a furnace by the old method will soon be numbered among the things of the past.

To be able to prove the immediate cause of scaffolding would be a very desirable addition assert that we have been most eminently successful and the scaffolding would be a very desirable addition. in a few hours what generally consumes weeks method will soon be numbered among the what oftentimes costs thousands has been the

change in the grade of the fron, loss of time or injury to the stack or its contents. We have repeated this demonstration time and change for the better can be made apparent in any size furnace that is working cold in 20 provement in the appearance of the cinder if there is enough in the hearth to flow. This improvement is effected by increasing the emperature of the hearth, adding the heat generated by the most powerful hot-blast that has ever yet been invented-a heat so powerful that the most refractory of all known material can be readily reduced by it; so adjustable that it may be readily applied to any part of the furnace, at the bottom of the hearth or at the extreme top, if necessary; so manageable that at pleasure its power can be varied instantly and reduced so low as to barely melt snow, or inreased to the intense power required to fuse the most refractory and best made fire-brick, and so simple that it requires but a few dollars expense to apply it, and but the least posible amount of judgment to use it.

In this connection I desire to state that every effort we have made to improve the working of a furnace by forcing new fuel in at the base of the stack, through the tuyeres or otherwise, and whether in a solid, liquid or gaseous form, has been a failure, and that there is a strict chemical law that must ever prove an obstacle to its success. We have learned this by experience and after many trials to make it successful, but have found that forcing air after the hydrocarbons, either as naphtha, refined or the crude oil, has ever cooled down the stack instead of furnishing additional heat, and that its effect is worse than water in this respect. But the application of the heat generated by the combustion of these agents outside of the furnace has an entirely different effect-that by forcing in the flame and heat we obtain the most satisfactory results.

Of this phenomena undeniable proof can be shown. The philosophy of it and explanations as they appear to us, we will leave to another Although the original design of this innovation was to supply only a keeper or regulator for a furnace, and to place in the hands of the founder or manager (what is so desirable) a sure means of controlling and increasing the temperature of his hearth at pleasure, thereby making him a complete master of his art, and enabling him to stop the progress of an approaching trouble and to restore harmonious relations, and although its construction is such that it can be applied in a few moments, and its use discontinued in less time, yet we have extended its use and find great benefit and manifest economy in its continued employment, finding the make of iron in a given time very much increased and a resultant economy far greater than was ever anticipated.

In conclusion, we can but reiterate the statement of having obtained positive, absolute success in removing chills and scaffolding, by melting them out with heat in less than one tenth of the time, and at less than one-tenth of the expense, when the stock is removed, the hearth displaced and the difficulty removed by cutting or blasting. Second, that an application of a portion of the same treatment will, when applied in time, arrest the progress of the evil and restore the furnace to its proper condition. Third, that in the hands of a watchful founder or manager, with the appliances in readiness it is nearly impossible for any bad management, or bad filling, to chill or bung up a furnace, or to cause difficulties that a few hours application will not remedy.

The accompanying illustration represents a neat little tool for sharpening skates. It has a recess to secure the file, which is held in place by a thumbscrew. The file used is flat on one side, for flat bottomed skates, and half round on the other for skates which are grooved. Any kind of file, however, can be used, whether long or short, if it is only thin enough to through the fore hearth, and a free furnace left ble as in the large stack. After heating it propenter the opening provided. In using a file to without shoveling out the stock or removing a erly, we charged it with ore and lime thorough- sharpen skates the great difficulty is to carry one side or the other. In order to accomplish this the sharpener has a flange and an adjust ration of an atom of iron that we could detect, able gauge, between which the blade of the usage they had received it became necessary to chilling as soon as it left the bot flame, and in its skate is held so that it cannot slip aside. The adjustable gauge enables any thickness of runner to be fitted. While any file, or a piece



of file, can be used in the tool, regular cutters are made for it which are more convenient, as they are better adapted to the work. Every skater knows how liable one is to take the edge off from a skate, and how quickly they become dull and rounded when the ice is even slightly dirty. Under such circumstances the pleasure of a day's skating is often spoiled, as a grinding establishment may not be within reach. In the country it is often impossible to

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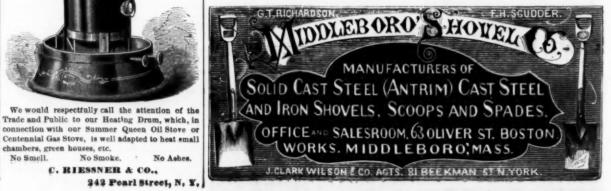
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a SPURIOUS PAINT, under an imitation name,
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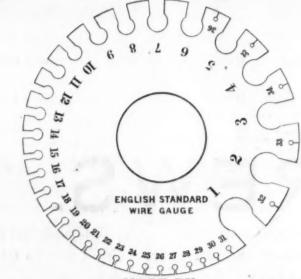
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The low price, super or quality and finish of this Platform will be readily acknowledged.

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INDUSTRIAL ITEMS.

MASSACHUSETTS.

The rolling mill of the Washburn Iron Comany, at Worcester, is shut down, with no immediate prospect of starting up. Work in the foundry is going on.

The rolling mill and the nail mill at Fall River have been stopped for the week, for the purpose of putting blasts in the four new

The plate turners in the nail factories of Wareham complain that they are unable to earn more than 90 cents to \$1 per day of eleven

The Lanesborough Iron Works are running on full time, and are opening new ore beds. Not once during the hard times has the 15th of the month failed to bring full pay to the workmen.

Pevey Bros., Lowell, are prepared to furnish light and heavy castings from 1 to 30 tons weight, having lately sold an anvil for a steam trip hammer weighing 29,070 pounds. They have recently increased their capacity, and employ an average force of 25 men, with a fair business outlook for the future. The shipping facilities for foundry work are excel-

The nail factories in East Weymouth, in which business has been suspended during the summer, owing to the inadequate supply of water, have now resumed operations on full

All the Wareham iron mills are running full time for the first time within a year.

Hon. E. C. Howard's foundry at North Sand-

wich is overflowing with orders. The Douglas Axe Company have finished a large government order.

RHODE ISLAND.

During the year 1876 the Providence Tool Company have paid seven per cent. interest on all their obligations, and have reduced their inwhich will enable the company to continue their work, and the company also holds a large fulfillment of the contracts upon which they are employed. The factory on Wickenden street has commenced running 13 hours, and it is expected the other factories will soon run the same number of hours. During the year this company has disbursed in the vicinity of Providence \$2,500,000, which has been received from a foreign country.

CONNECTICUT.

The report that the business of the Bridgeport Lock Co., of Bridgeport, is to be removed to New Britain next month is untrue, and probably was originated by the fact that the Russell & Erwin Mfg. Co., have purchased the interest of N. G. Miller in the business.

NEW YORK.

The Onondaga Furnace, Co, at Geddes, running but one furnace, and will not put; the other in until prices are better. The one in blast is doing excellent work, making 280 ons per week of the very best foundry, which will about supply their regular customers.

Swett, Quimby & Perry, of Troy, have posted a notice upon the door of their foundry, discharging all of their employes, from the book keeper down. All who desire to remain must make new bargains at new prices.

The Ellis Locomotive Works, of Schenectady closed since October, have been opened with work for 400 men.

Burdett & Smith, of Troy, have entered suit against the Cleveland Co-operative Company for an alleged infringement of a stove patent; \$50,000 are involved.

The Schenectady Locomotive Works, at Trov. are now turning out two locomotives a week, upon the recent order given by the New York Central and Hudson River Railroad Company.

NEW JERSEY.

The Port Oram Furnace is making preparations to start.

In the suit of the Rogers Locomotive Works, of Paterson, against the St. Louis, Iron Mountain and Southern Railroad, the jury rendered a verdict for plaintiffs for the full amount claimed, \$53,000. The claim, it will be remembered, was for nine locomotives furnished in 1873. The contract had been for 10 locomotives, but after one was delivered and paid for, the railroad company refused to accept the others, the defense being that the vice-president of the railroad company had made a mistake in taking the contract. The suit was tried before

Judge Larremore in the Supreme Court, Cir.

cuit, in New York city. The Paterson Iron Works now employ about 50 men, which is a goodly number, all things considered. Those great iron hooks which were being made at the works for Hell Gate, called devil catchers, have all been completed and delivered, and by this time, no doubt, they have brought up many a big rock to the surface of the East River. They have recently turned out some very large forgings, notably the crank and shafts for the steam-ship Daniel Drew. These heavy weights generally bring down the scales at about 8 or 10 tons, though they had a crank or shaft for a pump not long since that was the enormous weight of about 25 tons. Work of this kind seems to be coming in as fast as it goes out, and it keeps up a busy appearance for some

parts of the establishment.-Press. Newburgh, had received orders to close up on bushels. the 30th, and send all material to the Jersey City shop. It is presumed the shop will be reopened in the spring.

PENNSYLVANIA.

duces sixty tons of pig from per day, and has their fron mill they are doing but little. produced seventy-five thousand tons of iron

since it was first blown in some forty-three

It is said that Hon. E. A. Wheeler is at present engaged in arranging for the erection of a nail factory in connection with his rolling mill at Middlesex, Mercer county. He designs put-

ting in about 50 nail cutting machines. The rolling mill of Reis, Brown & Berger, Newcastle, was shut down the last week in May, and consequently has been idle some seven months. There is no prospect of it starting up at present.

Glendon Iron Company are preparing their largest furnace, No. 5, for blast.

At a meeting of the directors of the Coperative Iron and Steel Works, at Danville, held on the 29th ult., M. J. Grove was elected president and L. K. Rishel, secretary and easurer for the ensuing year

The daily production of the Clara Furnace. at Newcastle, is sixty tons.

The National Locomotive Works, at Connelsville, shipped an engine to Springfield, Ohio, on the 2d inst. This establishment in working full force, and now has orders for nine locomotives, which are all under construction.

Lemont Furnace Company are shipping from two to three cars of limestone per day, from Connellsville to Lemont.

The Harrisburg mills were reported last week as follows: Lochiel has been nailed up for the past six months; Paxton is closed for repairs; Bailey's was off week before last, but is on again; Hot-pot is on single, but orders are short.

The La Mothe Iron Car Works are to be removed to McKeesport from Providence, R. I. A number of the employes of the Scott Works, at Reading, had their wages reduced twenty per cent. This is said to be owing to the general stagnation in the iron trade of the Schuylkill Valley.

The Reading Hardware Company will go into operation again in about one week, when debtedness \$1,500,000. To accomplish this nearly 400 hands will be employed. The they have not sold any fixed property or ma-chinery. The Turkish government has ar-ranged credits, reaching several months ahead, two additional brick buildings, each two stories in hight, will be erected. One will be 80 by amount of collateral property to secure the 35 feet, and will be used in finishing and bronzing certain kinds of hardware. The other will be 35 by 40 feet, and will be occupied as a carpenter and cooper shop.

The Henry Clay furnaces, Reading, are ready to blow in with some little encouragement in the way of orders.

The Temple Furnace is also preparing to blow in, having some orders.

The second Plymouth Furnace was to have blown in last week.

The Reading Rolling Mill (P. & R. C. & I. Co.) was in operation two weeks in December. They stopped over the holidays and resumed on the 2d. It is uncertain whether the mill will run continuously or not, as their orders are

for March delivery.

The Hamburg Mul, which a Schuylkill county party proposed to lease, has not yet been started.

The employes in the shops of the Philadelphia and Reading Railroad Company, Reading, work one week in three weeks, eight hours a day, and in this way all are given a show.

Two furnaces, the nail factory and the rolling mill of E. & G. Brooke, at Birdsboro, are in operation.

The Bethlehem Brass Works, Shovel Works, Bessemer Works, and lesser manufacturing concerns, are busy.

The old mill of the Bethlehem Iron Company, at Bethlehem, is at present working on a two months' order for rails. The prospects for steady work at this mill are brightening.

Employes at the Pennsylvania Railroad shops at Altoona, heretofore working 8 hours a day, were to work 10 hours, commencing Monday

The Rodman furnaces will go in blast about Feb. 1st.

The Allentown Iron Company's furnaces give no sign of going into blast. They have a large stock of iron on hand, but it is held by the stockholders as individuals.

One of the Bethlehem Iron Company's furna es is out for repairs. The Glendon Iron Company have coal and ore

on hand, and it is rumored will start one fur-

The Thomas Iron Company have four furnaces in blast at Hokendaqua and two at Alburtis, and will probably not put any more in blast.

PITTSBURGH AND VICINITY.

Notwithstanding the dullness in trade during the past year, and the low price at which coal and coke was sold in the lower markets, the forthcoming report of the Monongahela Slackwater Company will show a material increase in the shipments during the past year, compared with 1875. Through the courtesy of Mr. Will P. Wood, clerk of the company, we are enabled to give the following figures, showing the shipments from the several pools

11,367,200 13,625,200 Total coal and coke

In 1875 the shipment of coal and coke aggregated 63,707,500 bushels, showing an in-The car repair shop of the Erie Road, at crease during the year just closed of 4,778,500

> There seems to be quite an inquiry for light rails for narrow gauge roads in this market.

Reese, Graff & Woods are running their steel and horseshoe department double turn, turning The Rosens Furnace, at Newcastle, pro- out in the latter about 10 tons per day. In

(Continued on page 11.)

At ples cludi

RUSSELL & ERWIN MANUFACTURING COMPANY, MANUFACTURERS OF HARDWARE.

Factories, NEW BRITAIN, CONNECTICUT, U.S. A.

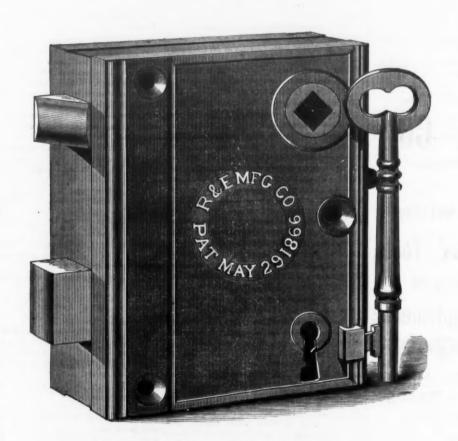
Manufacturers' Agents and Dealers in General Hardware at our

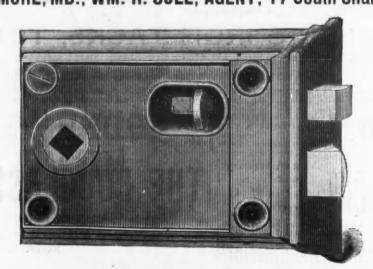
WAREHOUSES,

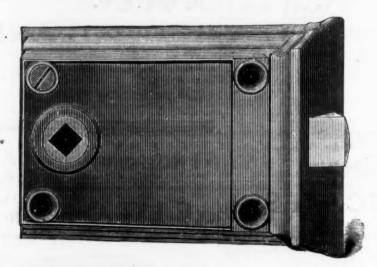
NEW YORK, - - Nos. 45 and 47 Chambers Street.

PHILADELPHIA, - - No. 425 Market Street.

SOUTHERN DEPARTMENT,
BALTIMORE, MD., WM. H. COLE, AGENT, 17 South Charles St.







NEW GOODS.

In consequence of the high prices established for Brass Bolt Rim Knob Locks and Latches, we have determined to place upon the market a new line of BRASS-PLATED goods, for which we solicit orders for immediate delivery. We shall increase our variety as occasion may require.

These goods are furnished with BRASS-PLATED BOLTS and SOLID BRASS Keys, and in make and finish are equal to our standard goods.

Н0	ME U	PRIGHT RIM KNOB LO	OCKS.	но	RIZONT	AL RURAL	KNOB	LAT	CHES.
No. B 861.	Size. 4 inch.	Janus face, 2 Brass-plated Bolts, Solid	Without Knobs Per Dozen.	No.	Size.				Without Knobs Per Dozen.
		Brass Key, without Stop	\$5·00	B 557.	3 1-2 inch.	Brass-plated Latch B	Bolt · · ·		\$4.00
B 861 1-2.	4 inch.	Janus face, 2 Brass-plated Bolts, Solid Brass Key, with Stop	5.25	B 552.	3 1-2 inch.	Brass-plated Latch a	nd Slide Bolt		5.00

Discounts, same as on our regular goods.

SCREWS.

We are now turning out five thousand gross per day of Flat Head Gimlet Point Screws of unequaled quality and finish. We solicit orders for these goods, and our prices will at all times be as low as those of any standard manufacturer, and in all cases we GUARANTEE THE QUALITY AND FINISH of our Screws, and invite a comparison under the SEVEREST TESTS with any other similar manufacture.

Our Screws are all packed in our new Patent Paper Boxes, bearing our labels, on which are LARGE FIGURES denoting the Size and Number.

Cutlery.

FRIEDMANN & LAUTERJUNG



Solid Steel Scissors, Shears, Razors, Russia Leather Strops, Hones, &c.

ELECTRIC RAZORS,"

And the "ELECTRIC SHEARS." Nickel Plated Agents for the BENGALL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c. 91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

MERIDEN CUTLERY CO. Received the HIGHEST CENTENNIAL:PRIZE.



MANUFACTURE ALL KINDS OF TABLE CUTLERY



THE MILLER BROTHERS CUTLERY CO.,

PATENT FINE PEN & POCKET CUTLERY

WEST MERIDEN, CONN.

The only Knives made that are put together in such a manner that there is no strain on the covg or frail part of the knife. We warrant our knives equal in cutting qualities and workmanship to any
fe, and are acknowledged by English makers as the Best American Knife. We also make

NICKEL & SILVER PLATED POCKET KNIVES

which will not rust or become discolored when used as a Fruit Knife, and their cutting qualities are equal to any other knife. Orders filled from the factory, and in New York by Messrs. J. Clark Wilson & Co., No. 81 Beckman Street (who have a full stock of all patterns always on hand), and also by Messrs. G. B. Walbridge & Co., No. 99 Chambers Street.

NAUGATUCK CUTLERY Manufacturers of FINE PEN & POCKET CUTLERY.

Cutlery.

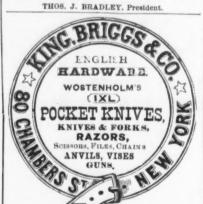
ESTABLISHED 1852.

NEW YORK KNIFE CO.

Fable & Pocket Cutlery, WARRANTED TO BE MADE OF THE BEST

MATERIAL.

WALKILL RIVER WORKS, Walden, Orange Co., New York.



Young's Patent Folding Scissors.



Fig simile of the small size.

For are made of the very best steel, nickel so constructed that they can be readily arried in the pocket without injury to the A sample pair will be sent by mail, to the

CAPEWELL MFG. CO.,

Shot Belts, Pouches, Powder Flasks, Powder and Shot Measures, WOODBURY, CONN.

Salesroom, 298 Brondway, N. Y., with Landres, Frant & Clark, mins. of Table Cutlery. Established 1853.

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Pen and Pocket Cutlery

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HALL, ELTON Electro Plated Ware, German Silver and Britannia Spoons.



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Salesroom, 75 Chambers Street, New York.

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Washington Works, SHEFFIELD,

WALTER SPENCER & CO., Steel and File Manufacturers, Rotherham, ENGLAND.

Corporate Mark SPENCER

Granted 1777.

ROTHERHAM

VAN WART, SON & CO

Hardware Commission Merchants, EXPORTERS AND IMPORTERS, BIRMINGHAM, - ENGLAND.

McCOY & COMPANY,

134 & 136 Duane Street, N. Y George H. Gray & Danforth.

F. W. TILTON. 17 Old Levee Street, New Orleans.
cach of these places a complete assortment of samof Hardware and Fancy Goods will be found, in ling all new descriptions. Sole Agents for

John Rimmer & Son's Celebrated Harness and other Needles. W. Clark's Genuine Horse Clippers. Scydel's "Ashantee" Pocket Hammock

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Celebrated I-XL Cutlery, Razors,&c HARDWARE, CUTLERY, GUNS, &c.

NDERS, Agent, 76 Reade Street, N. Y.



Joseph Rodgers & Sons'

CELEBRATED CUTLERY.

No. 82 Chambers Street, New York. P. & W. CLATWORTHY, Agents.

The demand for Joseph Rodgers & Sons' productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Fremlace and Steam power. To distinguish Articles of Joseph Rodgers & Sons' Manufacture, please to see that they bear

OWEN & CAMPBELL,

their Corporate Mark.

PEN AND POCKET CUTLERY

All blades forged from the best English Cast Steel, and Warranted. Each knife i- made in the most substantial and compact manner, all articles used being of the best quality. All blades stamped Owen & Campbell, Philadelphia. Orders flied from the Factory Rear of

220 N. Second St., PHILADELPHIA.

AMERICAN PEN AND POCKET KNIVES,

MANUFACTURED BY
ARIEN BURKIRSHAW.

ARIEN BURKIRSHAW.

My Blades are forged from the best Cast Steel, and warranted. To me was awarded the Gold MEDAL of the Connecticut State Agricultural Society; also a size I ad Diploma from the Mass Mechanics' Ass'n Sept., 1967.

THE "SUNBEAM" ILLUMINATING GAS STOVE.



(Continued from page 9.)

INDUSTRIAL ITEMS.

OHIO.

Bourne & Knowles, at Cleveland, manufacturers of nuts and washers, are running on nine hours' time; report orders in fair supply, and prospects rather better than for some time

The Standard Manufacturing Company, Cleveland, are making ten of their Domestic gasoline cooking stoves per week, and also some sixty patent steel tube scrapers.

The Cleveland Spring Works, Cleveland, are running on nine hours' time; business fair, and showing some slight signs of improvement.

The Pittsburgh and Lake Angeline Iron Com pany have established an office in the Waring

The old mill and steel works, Cleveland, will shut down for repairs on the 20th instant.

The trial of 30,000 bushels of Sheridan coke at the Ætna Furnace has given entire satisfac-

There are now three mills running in Nilesthe Falcon Iron and Nail Mill, the Niles Iron Co.'s Mill and the Russia Mill.

The Chillicothe Agricultural Works, at Chillicothe, are in the hands of an assignee. The assets have been appraised at \$38,000, and an effort is being made to raise the capital stock to \$50,000, and to indemnify the stockholders. A meeting was held there for this purpose two weeks ago, but after considerable exhortation to citizens to do their duty, &c., adjourned without accomplishing anything.

About a month since we called the attention of manufacturers to a self-feeding nail machine that had been built at the foundry of Booth, Miller & Co., at Youngstown. Since that time the Koplin machine, as it is called, has been removed to the nail factory of Brown, Bounell & Co., and there placed in operation. It has been subjected to the most severe test, and at a speed of 200 the feeder has cut 40 pounds of 4d. nails per hour. Its operations have in every way proved satisfactory to all interested. Another of the machines has been built, and is now in operation at Booth, Miller & Co.'s foundry.

No. 2 blast furnace, of the Cleveland Rolling Mill Company, at Cleveland, is now being lined. The furnace will probably be ready for the blas in about four weeks.

Newton & Cox, of Cleveland, have just re ceived a large order for twist drills from Dun ham, Carrigan & Co., of San Francisco.

ILLINOIS.

Chicago is steadily growing into prominene as a manufacturing center for iron and stee Of the Bessemer steel works in the Unite States, two are located in Chicago, and of th 291,000 tons of Bessemer steel rails manufactured tured in the country last year, 85,000 tons, o nearly one third of the entire quantity, were made in that city. The decrease in the value o the iron manufacture of 1876 is, according to the Chicago Tribune, much more perceptible in the minor branches than in the value of th rolling mill products. More iron was manufactured last year than in 1875, but the scale of prices was so ruinously low that sales on fa profits were out of the question. The cost of labor was about 5 per cent. lower than in 1873 Including the mills at Joliet and South Chicago which are owned by Chicago capitalists, the city now has four rolling mills. About 90,00 tons of steel rails were turned out in 1876 against 75,000 in 1875. The annual pay rolls the mills foot up \$2,300,000, against \$2,700,00 in 1875. Over 1100 tons of coke and coal ar daily consumed in the process of rail and p iron manufacture. The total number of esta lishments in that city devoted to iron works i the different departments is 173, with an in vested capital of \$14,800,000, giving emplo ment to 9178 workmen, and yielding an annua product of \$27,226,000. The aggregate wage paid during the year amounted to \$4,267,77 against \$5,650,837 in 1875, \$5,311,520 in 187 and \$7,294,680 in 1873. Of these 173 establish ments, only 26 were in existence previous

The Belleville Nail Works, under the officia The Belleville Nail Works, under the doing management of Gen. W. H. Powell, are doing Total of iron ore management of Gen. W. H. Powell, are doing total of iron ore smelted in the better work than ever before. Week before last about 2800 kegs of nails were made, more than half of which were finer than 10's. A large percentage of old rails is used with excellent results by a method for which Gen. Powell has asked for a patent.

The North Chicago Rolling Mills have contracted with several railroad companies to supply large quantities of iron and steel equipments in the year on which we enter, so that the works will be run throughout the winter. One of these orders, from the Pittsburgh, Fort Wayne and Chicago Railroad, is for 4000 tons of

Early in December it was stated by the Chicago press that the Joilet Iron and Steel Company, Chicago, had abut down work and left their 800 or 900 men out in the cold. The fact was, however, that on the 11th ult. they began on new orders for several thousand tons of steel rails, and have finished in activity the year so begun and carried through.

The Keystone Manufacturing Company, whose works are at Rock Falls, give con stant employment to 150 hands, and at no time since the panic of 1873 have they reduced their force or run on short time. They turned out in 1875 about \$500,000 worth of agricultural implements. These are the Keystone corn planter, sulky rakes, seed sower, cider mill, 'common sense" feed mill and corn sheller. In the year just closed the company have filled large orders from South and Central America, Austria and Russia.

a daily average of 11 37-100 tons, having made a total turnout of 1955 74-100 tons of No. 1 pig iron, in the manufacture of which she used 1558 loads of charcoal, 5675 27-100 tons iron ore, and 278 10-100 tons of limestone. This makes a yield of ore ton of iron to 159 bushels of charcoal and 2 90-100 tons of iron ore.

TENNESSEE.

Truxal & Dunmeyer, proprietors of the Enterprise Machine Works, at Chataneoga, have added thirty feet to the length of their shop, and are further increasing their capacity by a large new steam boiler. They are at work on a new vertical engine for their shops, which will increase their present motive power five times and will be the finest engine built in that city. The steady increase of their business has made these additions necessary.

MISSOURI. Mr. G. A. Millard has recently withdrawn from the firm of Geo. H. Hull & Co., of Louisville, Ky., and established himself in St. Louis, dealing in pig iron, fire-brick and blooms

The St. Louis Bolt and Iron Works have contracted for two miles of fifteen pound rail for a street car road at Fort Worth, Texas.

MICHIGAN

The Detroit City Glass Works, at Springwells, are in full blast, and employ about 75 men.

The loss sustained by Codey & Clark by the burning of the stove factory at Believille is nearly \$9000. In consequence thereof Mr. Codey has made an assignment.

WYOMING.

The Laramie Iron Works were recently turnng out 60 tons of ralls per day. COLORADO.

The foundry at Denver, which has hitherto een occupied entirely with mining machinery, is now to be greatly enlarged, and will extend its operations to the manufacture of engines, boilers, bridges and agricultural implements.

The British Mineral Statistics.

The following are the official statistics of the mineral production of Great Britain in 1874 and 1975, Quantities. Tons. Cwt. 181,867,105 0

n	WOLD!				
· 1		1874.		1975.	
- 1		Quantities.		Quantities.	
٠. ا	Minerals.		Cwt.	Tons. C	wt.
g	Coal 1	25,043,357	0	181,867,195	0
1.	Iron ore	14,844,936	10	15,821,060	3
- 1	Copper ore	78,591	0	71.528	0
36	Tin ore		7	13,998 77,746 23,978	10
- 1	Lead ore	76,201	12	77.746	4
_ 1	Zinc ore	16,829	16	23,978	8
0~	Iron pyrites	56,208	3	48,035	16
3-		6,268	9	5,061	5
4-	Arsenic	5,778	1		11
- 1	Manganese		î	3,905	12
	Ochre and umber	7,122		5,815	
- 1	Wolfram	95	15	40	2
	Bismuth	****	40		0.0
ee	Silver ore	3	10	****	
1.	Fluorspar	634	10	358	18
	Clays, porcelain and fire-clay				
d	and fire-clay	2,436,912	0	3,008,444	
e	Salt	2,396,567	0	2,316,644	0
10	Barytes	14,374	0	15,549	5
e-	Coprolites, &c.,	,			-
_	and phosphor-				
or		149,654	0	250, 122	0
e	1te		0	and the	0
-	Gypsum	66,194	U	449 990	· in
of	Oli shales			442,336	0
0	Plumbago			30	0
	1	RON OHE P	RODUCE		
n					
		1874.		1875.	
e	~	Quantit	les.	Quantities	
c-	Counties &c.		Cwt.		WE
-	Cornwall	45,000	18	11,403	15
of	Devonshire	21,31	3 3	10,594	1
4-	Somersetshire	41,34	2 7	45,165	17
ir	Gloucestershire.			111,825	16
of	Wiltshire			87,159	0
	Oxfordshire		8 10	34,568	0
5.	Leicestershire			0.1000	-
0,				1,085,198	16
	Northamptonshi			579 966	0
at	Lincolnshire			573,366	
00	Shropshire	308,95	9 10	940,568	0
	Derbyshire	239,29	3 0	218,132	0
6,	Nottinghamshire	22		11,750	9
	Warwickshire Staffordshire, N. Staffordshire, S.	92,21	4 0	97,456	
of	Staffordshire, N.	1,032,36	5 0	939,028	18
00	Staffordshire, S.	141,50	4 18	715,451	0
	Lancashire	914,85	7 7	834,484	4
re	Cheshire		0 0	1,500	0
	Cumberland	1,119,66		1,147,968	6
ig	Westmoreland.	50	4 0	-,,	
b-	Vorkshire N R	5,614,32		6,121,794	
	Yorkshire, N. R. Yorkshire, W. F.	370,96	0 7	358,589	- 6
in	Northamberland	010,90		000,000	•
n-	Northumberland		0 17	60,515	15
	Durham	. 1			0
y.	North Wales	42,22	7 9	42,184	0
	South Wales a	nd		*** ***	-
al	Monmouthship		6 10	495,840	5
es	Isle of Man	1,14	3 18		
	Isle of Man Scotland	2,119,77	1 0	9,452,235	0
Ό,	Ireland	. 140,36	0 4	128,602	0
4,			-		
-1	Total iron ore p	ro- ·			
h-	duction of	he			
	United Kingdo	m 14.844 99	6 10	15,891,660	3
to	"Burnt ore" fr	12022,00		20,041,000	4
	Burnt ore In	ORE OF	0 0	280,000	0
	cupreous pyrit	es. 255,00	1 0		
al	Iron ore imperte	d. 754,14	1 0	458,693	0
g					_
-	Total of iron	379			

The Edgar Thomson Steel Company-(Limited), ran in 1876, single turn from January 1st to March 13th, and double turn from March 13th to November 3d, from which latter date to December 31 operations were suspended to make necessary repairs. The amount of materials melted during the ten months was as

United Kingdom, 15,854,077 10

Pig Iron Spiegeleisen ... Scrap

Total	remelted	51,047	664 1,941
Leaving of material			963
The monthly pro 1876. 1876. February February March April May June July August September November	Ingots. 2,550 2,407 4,946 4,026 5,403 4,290 4,510 4,796 4,239 4,980 665	Blooms. 2,472 2,199 3,497 8,565 4,663 3,988 4,293 4,758 4,348 4,249 4,758	Rails. 2,055 1,810 2,800 2,652 4,128 3,346 3,548 3,641 3,923 450
December	42,112	39,301	89,226
		Gro	ss tons.

Total merchantable product This was produced in two and a half months, running single turn, and seven and a half

The Brazil Furnace is running part on Bessemer and part on mill.

RENTUCKY.

Pennsylvania Furnace, during the termination of the 172 days she was in operation, made

INDIANA.

running single turn, and seven and a haif months double turn, an amount of product never before equaled by any Bessemer plant in its first year's operations. The works started January 2d with the plant in much better condition, both for rapidity and economy of production, than ever before.

HARVEY W. PEACE.

JOHN HOGAN.

PEACE & HOGAN,



CIRCULARS, CROSS-CUTS, MILL, MULAY, GANG, HAND, & BUTCHER. Molding and Planing Knives, Plastering Trowels, Mitering Rods, &c. FACTORIES:

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\$1.50 Per Foot.



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WARRANTED STEEL

Of every description, including Circular, Shingle, Cross-Cut, Mill, Hand, WOOD SAWS, Etc., Etc.

AMERICAN SAW

Movable Toothed Circular Saws, PERFORATED CROSS-CUT SAWS

And SOLID SAWS of all kinds.

Trenton N. J.

E. M. BOYNTON,

First-Class Saws, Saw Frames, Cross-Cut Handles, Tools, Files, &c. Also Sole Proprietor and Mfr. of the Genuine Patent Lightning Saw, No. 80 Beekman Street, NEW YORK.

Special attention is called to my new Centennial Saw, patented March 28th, 1876; Special File and Saw-Set combined, patented June 20th, 1876; Cross Cut (Loop) Saw Handle, patented February 15th, 1876; New One-Man Saw, with Patent Double Removable Handle Attachment, March 28th, 1876; New Patent Champion Clearer Tooth, patented August 15th, 1876; Sww Sct, patented Nov. 28th, 1873—a perfect Set that a blind man can use to condense like a Hammer Set perfectly; Cross-bar Wood Saw Frame, patented Nov. 12, 1872; also Cross-Cut Ha Tnezs goods complete the scientific tools for cutting timber teeth (which are like a fractured plate sharpened).





AWARDED OF STEINHAL MEDAL APTURE ANY UNITED AND AWARDS.

REPORT ON AWARDS.

GROUP No. 15.

Product: Saws in great variety; special improvement in shape of teeth, called Patent Lightning Saw.

Name and Address of Exhibitor: Eben Moody Boynton, New York,
The undersigned having examined the product herein described, respectfully recommends the same to
the United States Centennial Commission for award, for the following reasons, viz.

Report: "Being of very Superior Quality and of great Practical Utility." DANIEL STEINMETZ,
Signature of the Jadge.

J. D. IMBODEN, of Virginia. CHARLES STAPLES, of Maine. G. L. REED, of Penn.

D. IMBODEN, of Virginia, CHARLES STAPLES, of Maine, G. L. REED, of Penn., DAVID McHARDY, of Scotland, D. STEINMETZ, of Penn., A true copy of the record. Given by authority of the U. S. Centennial Commission.

J. L. CAMPBELL, Sec'y.

A. T. GOSHORN, Director General.

J. R. HAWLEY, Prest.

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FOR FALL TRADE.

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"STAR"

FANCY HEAD BOLTS. Carriage & Tire Bolts. V Star Axle Clips, &c.

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The Original and Only Establishment Manufacturing the

Made of Best Quality

SQUARE NORWAY IRON.

Successors to M. J. COLEMAN.

WORKS, Columbia Avenue, Hancock and Mascher Sts.,

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PHILADELPHIA.

CARRIAGE BOLTS.

Buy the Best.



Clark's Patent Carriage Bolt.

Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and cann MANUFACTURED BY

CLARK BROS, & CO., Milldale, Conn. Also Manufacturers of

Plow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, etc.

HOOPES



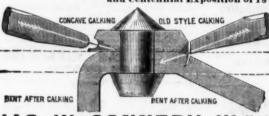




"Keystone" Boiler Rivets, BRIDGE & SHIP RIVETS

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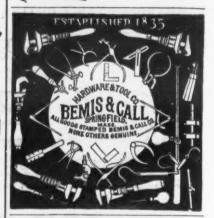
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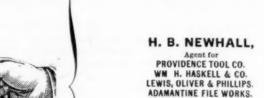
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The Iron Age.

New York, Thursday, January 11, 1877.

DAVID WILLIAMS . . Publisher and Proprietor JAMES C. BAYLES Editor. JOHN S. KING

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Thirty-ninth Page.—Chicago, Boston, and St. Louis Hardware and Metal Prices.

A portion of our edition of December 28th having been destroyed in the railroad disaster at Ashtabula, Ohio, those of our subscribers in the West who have not received that number will be furnished they were of a good quality of car wheel country, set about designing a car without is exhausted.

The Bridge at Ashtabula.

In our issue of the 4th instant we re-

personal knowledge. In the first place, let us say that a great deal has been published concerning the pattern, construction and general quality or the bridge, which has no foundation in fact. It was a deck bridge, with guard rails of the most approved pattern, which were brought to a point on the bank at either end. These rails were so disposed that, had a car jumped the track before striking the bridge, it would either have been forced back upon the rails or its wheels would have been made to run very nearly in line with those on the rails. The statement, which has found currency, that the fracture of the bridge was caused by the bumping of cars off the track, cannot be sustained by any evidence yet found. We do not believe that, at the time the bridge fell, any of the passenger cars were upon it. Indeed, there is positive proof to the contrary. When the bridge went down, the forward engine, according to the testimony of the engineer, was within two car lengths, or about 100 feet, of the west end the span was only 150 feet, and as there were two engines and four express cars at the head of the train, it is impossible for four express cars to have been on the down; consequently, the surviving pasthat the cars were off the irons. The testimony of the engineer of the forward engine shows that his own engine was on

Now, in what condition was the deck of duced by a car or engine running on the ties? First, we have the guard rails already mentioned, which we judge were about 31/4 inches from the rails. The ties under a load which could not have been were 5 inches wide, and were only 2 inches apart from center to center, thus forming | weights which have rolled over it safely duran almost continuous floor from end to end ing the period of its service, it offers a of the bridge, and we very much doubt problem to the engineer which contains whether a passenger in a car would know whether a tratn was on the ties or the rails may we not expect such a disaster at any under such circumstances. At a distance of a little more than 3 feet from the rails a are plenty of cheap, badly built bridges heavy stringer was bolted to the ties to hold their ends in place. This also served anxious fears, and which, to all appear as a guard beam, its outside edge being 4 ance, only stand by the grace of Godfeet 4 inches from the rail. Beneath the When these fail we are not surprised; but right-hand rail were two stringers, each 6 by 14 inches; and under the left-hand under the weight of two engines and, at rail there were three such stringers. No one would have the least fear in running under a heavy freight and passenger trafa car or cars over the floor of such a bridge, fic, we realize how much we have still to so far as the bridge itself is concerned, learn of the art of bridge building. and cars have been safely dragged across bridges while off the irons where the distauce between the ties was 8 inches instead of 2. In respect to flooring and track, the bridge was thoroughly first-class. Indeed, it was exceptionally good. It is doubtful if the most expert of our engineers who have given attention to bridge building could have suggested any change for the better in this respect.

The panels of the bridge were 11 feet in nation that this took place during the con- eration. struction, and was very probably due to springing or settling of the centering, failure of the bridge to these imperfections years.

taken pains to obtain, and can now speak work will be done under the direction of a of the bridge and its construction from legislative committee, with the hearty co. The cross constructions are of plate iron eleven months footed up as follows:

operation of the railroad officers. From which is now taking testimony, we do not expect much. From present appearances they cannot do otherwise than acquit the the responsible officers of the Lake Shore Road from blame, with a few general recommendations consisting principally of well-meaning platitudes.

built some years ago by the company's engineers, and was the first constructed by the iron shipbuilding establishment can do. road. While not as perfect in its details as some of the bridges since built, it is not one known in the market-channel, T and anwhich could be condemned off-hand, nor one with which the intelligent and im- pieces, comprising almost the whole list. partial engineer would have been likely to find fault. We speak advised- this description are of about the average ly when we say that a careful and thorough examination of the plans of the 15 tons as a standard load. The cost will instead of 900. With these changes we bridge and of the wreck, reveals no cause of failure which can be accounted sufficient car-say, from \$150 to \$200. There can be year just ended : to explain it. Of course, such cause exists, but it is not of one of the kind which appears on the surface. An impartial of the bridge. Now, the total length of judgment could not but have pronounced it a good bridge, and this fact renders it the more important that the investigation proposed by the Legislature more than the two engines and two of the should be searching. The conclusions of burgh, exhibited some very interesting the committee may not be worth much, bridge at the moment it sank. The pas- but from the testimony of experts, whose senger cars must, therefore, bave been attendance as witnesses the committee will upon the bank when the engine went undoubtedly invite, we shall gain a vast might be described as composite bars, the amount of knowledge from which the ensengers must be mistaken in supposing gineer can profitably draw his own con-

We spoke of the disaster in our first brief comments upon it, as a "disquieting accident." This is the more true in view of the facts since learned, and which we have the bridge to withstand the shocks pro- stated above. If a bridge well built of 2. The firm are making experiments with good materials, and nearly, if not exactly, correct in its proportions, suddenly and without warning sinks in shapeless ruin within many hundreds of tons of the some new and important factors. Why moment and on any road? We know there which the engineers are watching with when a bridge like that at Ashtabula falls most, two cars, after several years service

Iron in Car Construction.

The question of employing iron as a material for passenger car construction is just now attracting a great deal of unintelligent newspaper discussion. In a general way, it may be said that those who know most about this subject have the least to say concerning it. When we begin to emlength, and the hight from the center line of ploy iron as a material for passenger cars the bottom to the center line of the top chord | we must be prepared to make our cars enwas 22 feet. The span, as we have said, was tirely of iron except, of course, the inside 150 feet. The stone abutments were all finish. It is no impossible thing to design right and still are. Some of the dailies such a car, yet any of our best builders have made a great talk about a supposed would say that the task is at present by no sinking of the masonry of one of the means an easy one, because it requires such arches and abutments, and have thus a wide departure from our present practice framed a theory of the accident. This is sim- in order to meet the requirements of the ply nonsense. The crown of the arch at the new material. Doubtless iron is the matewest end of the bridge has settled slightly, rial of the future, but at present the deso as to be apparent when sighting along signs for iron passenger cars which have the course, but it is evident upon exami- been made public are hardly worth consid- ply, notwithstanding a larger output in

The plans and drawings submitted by Mr. O. Chanute at the last monthly meetallowing the keystone to come down an ing of the Master Car Builders Association, inch or so. A slight crack or opening of contained the first practical hints upon the the joints has occurred, extending down methods of substituting iron for wood in toward the outer abutment of the arch, but railway freight cars, which have been given this is not at all serious. To attribute the to the profession. Indeed, we think these designs the most important contributions to in the masonry is folly. So far as they are the science of car building in this country concerned there is no reason why the which have been made in a very long time. bridge should not have lasted a thousand The designer has done what has not been attempted before-to adapt European prin-From a careful examination of the ciples of construction to the American wreck, we find the quality of the iron railway freight car. In our freight work visible to be good—the suspension rods, we have adopted almost exactly the same where they can be seen, are very good. principles of construction as in the passen The castings are of exceptionally good ger car. Our designs have been made with iron, and we should say from the appear- special reference to the use of wood as a ance of one or two which it was attempted material. Mr. Chanute having in mind to break in clearing away the wreck, that the rather poor record of iron cars in this copies upon application, until our supply iron, since in one case the corner of the reference to what had been done before, casting actually bent under the blows of and in which the iron should be used conthe sledges. If we remember rightly only structively. The floor, instead of being one casting was broken. At present the composed of many longtitudinal sills, has iron is so covered up by the ice and debris its strength concentrated into two heavy of the wreck that it is idle to think of beams, so disposed as to come directly beferred briefly to the shocking calamity at | forming an opinion concerning the cause neath the load. The strains of drawing Ashtabula, Ohio, and promised further of the disaster. Doubtless when the iron and buffing are taken by a pair of longicomments when in receipt of fuller in- is taken out and the whole bridge ex- tudinal members in the center. Buffing formation. This information we have amined an explanation can be found. This strains are also distributed to some extent

worked in between the principal members. the investigation of the coroner's jury, The outer sill of wood is carried from the main sill by brackets.

No dependence whatever for load carrying is placed upon the side or wall of the car. The house, or superstructure, is barely heavy enough to prevent its destruction by its own momentum in stopping and starting. In the construction of the The ill-fated bridge was designed and floor of the car nothing but plain, straightforward work is found, just such as any The sections of iron used are those well gle irons, with a few flanged and gusset

It only remains to be said that cars of weight, and are capable of carrying some exceed a little that of the ordinary wood little doubt that these plans fulfill the requirements of an iron car adapted to the wants of American railroads, cheap in price, strong, and having an average life of not less than 25 years.

At the same meeting Mr. Wilson, of the firm of Wilson, Walker & Co., of Pittsspecimens of iron with steel centers, or steel bars plated with iron which are especially suited for car building work. They relative amounts of steel and iron being varied to suit circumstances. The weld was perfect, and the steel and iron draws down together with perfect regularity. Some of these bars have been tested, and a tensile strain of 115,000 pounds per square inch obtained from a specimen 1/2 inch by

axles made in this way, the steel being cored through each axle. Great strength and toughness are thus combined. Any of the ordinary shapes are manufactured Special attention is being paid to angle, channel and bar irons adapted to car builders' uses. These irons weld as perfectly as ordinary bar and with no more difficulty. The method of manufacture is peculiar and interesting. A box of wrought iron is turned up from a plate and fitted with a cover. This is filled with steel scrap, and the cover fitted on. It is then heated and treated in the same manner that a bloom would be, under a hammer or in the rolls. The combination seems to be one which will be of the greatest value in the arts, and we shall watch its development with interest.

The Increased Production of Quicksilver.

According to estimates telegraphed from the Pacific Coast the states and territories west of the Missouri River produced in 1876 \$44,328,000 in gold, and \$41,536,700 in silver, Nevada standing at the head of the list with a production of \$49,081,000 of the precious metals, followed by California with \$18,615,800, the remaining \$18,167,900 being made up by Utah, Oregon, Arizona, Montana, Idaho and Colorado.

This copious production of the precious metals having involved a very large consumption of quicksilver, the steadiness in the value of the latter in spite of an enormous yield is satisfactorily explained. During the latter half of the past year the price at San Francisco at one time advanced to 571/2c., gold, per pound, but the large receipts caused it to recede to 50c. London has also varied little from £8. 10/ per flask, the present figure, the demand having been all along fully up to the sup-Spain.

The success which has attended oper ations at great depths in the Virginia City mines, has been followed by similar at tempts in other silver producing countries and the comparative cheapness of quicksilver has, moreover, allowed the working of inferior ores brought to the surface in many localities. At the same time the advance in silver from 46d. to 55d. (something like 20 per cent.) since midsummer, has imparted renewed stimulus to silver mining generally, and quicksilver has been in all the more active request.

The quicksilver export from San Francisco from January 1 to July 1 was as

follows:				
	18	75.	- 18	376.
To	Flaske.	Value.	Flasks.	Value.
New York	12	\$ 1,423	1,925	\$ 87,456
Mexico	2,605	202,050	2,924	181,714
Chili	355	24,803	400	17,611
New Zealand.	25	1,398	208	9,810
Chana	4,863	301,639	11,308	493,513
Japan		21,845	216	9,181
Central Americ	CB 4	210	117	5,086
British Colum		596	4	180
England	100	7,650		****
South America		96,516	857	37,336
Australia	359	21,959	473	20,925
Calcutta		550	****	
Russian Asia.	8	195	****	
	-			+

Total......9,665 \$680,764 18,427 \$812,312 Up to December 7, 1876, there were exported 38,964 flasks, worth \$1,557,490, against 27,323, amounting to \$1,617,289 in 1875, an excess of 11,641 flasks, and a decrease in value of \$59,799.

Coast flasks, 281 62 154 317 304 362 383 469 256 479 437 309 465 100 303 320 428 209 292 151 265

42,628

2,844

Total

They were consequently about 27 per cent. in excess of the preceding year. Estimating last year's total increase of production to have been in the same proportion, we have an output of 68,200 flasks, against 53,700 in 1875. The Spanish output may be valued at its maximum in 1870, say, at 41,000 flasks instead of 36,000 flasks in 1875, and that of Mexico at 500 should have the following result for the

Californ	11	В							,				. ,	. ,			£	*	. ,	*		×	٠				ė		×	*	*	*	68	3,	2(
Spain			*		×	×	×		*	*	×	*	ĸ		×	×			.,		*							,		÷			4]	١,	0(
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Mexico				*								*	×				. ,		×							,		*					. "		50

against 105,700 in 1875, an increased yield to the amount of 19,100 flasks, or 18 per

The Population of the World.

The latest estimates of the world's popuation, as given in the fourth annual edition of Behm and Wagner's statistical work, give the whole population of the globe for the present year as 1,423,917,000. The area of the land surface they calculate to be 51,340,800 square miles, thus giving an average density of about 28 people to the square mile: These data are apportioned among the various divisions of the globe as nearly as possible as follows:

Square Mile. Europe 3,776,496 Asia 17,079,383 Africa 11,415,894 Australasia &	Inhabitants, 309,178,390 834,548,500 199,921,600	Density per square Mile. 82 48 17%
Polynesia 3,381,210 America 15,687,840	4,748,600 85,519,800	11%

These figures can only be regarded as, at best, a rough approximation, though based upon the best data at hand. The population of Asia and Africa can only be guessed at, and the same is true of Australasia and Polynesia. The populations of the various states of Europe are estimated as follows:

| Mated as follows :
| Germany, 1875, 42,723,342 | Great Britain, 1876, ..., 37,700,000 | Spaln, 1870, ..., 16,551,647 | Switzerland, 1879, ..., 2,669,147 | Netherlands, 1875, ..., 3,809,527 | Beignum, 1874, 5,336,634 | San Marino, 1875, ..., 295,158 | Russia, 1870, ..., 1,730,990 | Sweden, 1875, 4,383,391 | San Marino, 1874, ..., 7,816 | European Turkey, 1875, 1,922,883 | Senmark, 1876, 1,903,000 | Roumania, 1873,5073,000 | Roumania, 1873,5073,000 | France, 1872, 36,102,921 | Greece, 1870, ..., 1,877,693 | Montenegro, ..., 1,877,694 | The following details are interesting:

The following details are interesting: The following details are interesting:
The population of British India is rather less than last year, being 188,093,700, that of British Burman being about 2,750,000, including tributary or protected states. The whole population of British India is close on 239,000,000. The population of China is 405,000,000, with 28½ millions of outlying people. Japan is set down at 33,299,014. According to latest statistics, the whole population of Australia amounts to 1,867,000; of New Zealaud to 421,32%. In the Fiji Islands the native population seems to be whole population of Australia amounts to 1,867,000; of New Zealand to 421,325. In the Fiji Islands the native population seems to be rapidly decreasing. It is calculated now not to exceed 70,000, while the whites, who in 1872 numbered 2940, were last year only 1650. There is an increase over the whole of America of upward of 1,200,000 over the number given last year. This increase seems to a considerable extent due to the fact that more recent statistics have been obtained since last year, the data in many instances referring to 1875 and 1876. Canada is still 3,672,116, and the United States nearly 40 millions. Mexico stands at 9,276,079, and this must be from quite recent data, as last year's number was that of 1872. The Central American States show a slight decrease, the number this year being 2,828,164; the West Indies, 4,316,178, and all South America, 26,309,700, of which Brazil claims upward of 11 millions. There are 29 towns whose population reaches or surpasses 500,000. Those at or above a million are: Berlin, 1,045,000; Canton, 1,000,000; London (1876), 3489,439; New York, with Brazellur (1878). 500,000. Those at or above a million are: Berlin, 1,045,000; Canton, 1,000,000; London (1876), 3,489,428; New York, with Brooklyn (1875), 1,535,622; Paris, 1,851,792; Seangton, Shanchowfu, and Singanfu (China), each 1,000,000; and Vienna, 1,001,999.

The population of New York should include beside Brooklyn, Jersey City, Hoboken and all that he's between, the fact that they are in another state does not make them any the less a part of one great city which is rapidly spreading in all directions. Had New York been built on the main land, with its harbor in front and a broad stretch of unbroken country behind, a hundred cities and towns which have been built up from its overflow, and which serve as dormitories for New York business men, would have all been wards of one great metropolis. As it is, the geographical limitations of Manhattan Island are an insurmountable obstacle to the concentration within our corporate limits of what is really our population.

The annual meeting of the National Association of Stove Manufacturers will be held in the Common Council Room of the New City Hall, Troy, N. Y., on Wednesday, Jan. 17th, at 11 o'clock, a. m. From small and doubtful beginnings this Association has grown strong in numbers and The monthly receipts during the first influence. It is a national association in the truest sense, and has already resulted

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pany,

in great benefit to the stove founding indusjust now very peculiar, the problems to be ceptional interest to manufacturers, and it is hoped there will be a large attendance from the West. The Association is in a position to render important service to the trade in remedying some of its most hurtful abuses, and under the wise and conservative leadership of Mr. Jewett, its deliberprofitable.

During the present week one of the richest men of the nation was carried to burial-a man who had lived out more than the allotted three score years and ten. and who, from boyhood to the day of his death, has been a vigorous, energetic and successful man. He was called "Commodore" and the "Railroad King," and occupied a position of controlling influence for a generation; but his death leaves no void, and only his personal friends and relatives will miss him. The great enterprises he founded and successfully managed will go on as before, and others will consummate what he began as well as if he were still here. The man was great in many ways, but while his business policy was dictated by considerations of self-interest only, he rendered important services to the public as a common carrier. It must be conceded, however, that he failed to employ the vast powers of his wealth and influence in that large and liberal way which would have made him entirely great, and worthy of a place in our national history. As it is, his fame consists in the enormous measure of his wealth, and even this will be forgotten a generation hence. We do not blame Mr. Vanderbilt for the selfishness of his life. He was born in poverty, won his way to wealth by a rigorous industry and close economy, and when he had wealth he employed its possession in the only way of which he was capable. He was not a miser, but he held his wealth with a firm grasp, and parted with it only for value. He was a representative man of a very large class of successful money getters, and all we can expect of them is that they shall incidentally benefit mankind in promoting their own interests. They have no conception of the pleasure which openhanded benevolence gives to those who love their fellow men, and we cannot look to them for large aid in carrying on or sustaining the great charities or advancing the progress of the arts and sciences.

And so we are to have another coal com bination, provided the Lehigh Company will come in and give bonds to keep peace in the family. The committee appointed at the meeting of the coal operators on Friday have interviewed the various railroad officials who are to constitute the new ring, and report that the negotiations are progressing very satisfactorily. The Delaware, Lackawanna and Western Company had not fully agreed to join at last accounts, but it is said that the points of difference can be satisfactorily adjusted. We confess we are sorry to hear Coal mining and carrying is a business which is not essentially different from any other business in which competition exists, and if it cannot be made to pay except through a combination of producers, which seeks to set at defiance the laws of trade and to maintain prices on an artificial basis by artificial means, it must be ac cepted as a confession that the gentlemen who manage the coal business of the country are not competent to do so. If this be true-and we fear it 18-a combination will not save them. The trouble is that the coal traffic of our great mining and carrying companies has to pay too much interest. It cannot continue to do so under present conditions, and it is doubtful if it will be able to in the future. "Vaulting ambition which o'erleaps itself." has characterized the management of these great companies, and they will need the best and most prudent manage ment during the next ten or twelve years to put them on their feet again. A combination to restrict production and maintain prices above the level at which a healthy and natural competition would place them, can only end in just such a crash as we have had in the coal market during the past half year.

The annual report of the Reading Railroad Company makes a poor exhibit this year. It shows the total receipts during the year to have been \$13,919,993.55, and expenses, \$6,129,757.72, a décrease of \$443,416 in receipts, and increase of \$380,094 in expenses as compared with the previous year. The net profits were \$3,717,161, showing a decrease of \$850,607 as compared with the previous year. The net profits have been insufficient to meet the fixed charges against the company, the deficiency being \$1,355,708.58. The tonnage of the company was 10,-

236,326. The loss in the year's business try. As the condition of the stove trade is of the Reading Coal and Iron Co. is \$203. 642.59, after charging off for depreciation considered at the meeting will be of ex- of the stock of coal on hand at the dissolution of the coal association the very large sum of \$931,705.45. This loss is increased \$653,539.03 by bad debts charged off and depreciation of property and stock of iron. The entire indebtedness is \$17,-728,041.68, and the entire annual fixed charges of the railroad company \$5,279,ations cannot fail to be harmonious and 367. Of the whole number of shares of stock, 376,991 are held by American stockholders and 308,672 are held abroad. A resolution approving of the issue of \$10,000,000 of income mortgage bonds was adopted, and Mr. Gowen was reelected president. We are not very familiar with what is known as "railroad financiering," but we should think that, considering the nature and market value of some of the principal assets of the company, a deficit of \$1,355,700 in the net earnings was a rather slender basis for the issue of \$10,000,000 of income mortgage bonds.

The English capitalists who undertook

to confer upon China the benefits of railway facilities manifested a courage which is worthy of all commendation. The conditions of the charter are very stringent, and the difficulties experienced by the management are of a kind which may be considered discouraging. When the first line was opened last summer, a crazy man, who threw himself in front of the engine, was run over and killed. It was a clear case of deliberate suicide, and the corporation were evidently in no way responsible for the man's death. The engineer had stopped the train and the man stepped aside unhurt, but as soon as the train was started again he leaped back upon the track and was killed, as he evidently desired to be. The engineer was hailed before the courts, however, on the charge of murder, and promptly acquitted. But the matter did not rest here. The cor poration was enjoined from running any more trains, and, according to the text of the Woosung Railway Convention, signed late in November by the Chinese officials and the Secretary of the British Legation, at Peking, the shareholders will have to pay heavy damages to the family of the lunatic. They might expect in time to outlive this foolish prejudice, which places so many and serious obstacles in the way of the enterprise, but it is doubtful if they are allowed to do so. The company have the privilege of operating the road for a single year, after which it will become the property of the Chinese government. If it does not pay expenses, the rails will probably be torn up, and railroad progress in the Celestial empire will be checked. One of the articles of the agreement limits the traffic to the transportation of passengers. Evidently there are more inviting investments than are offered by the securities of Chinese railways.

The two serious marine disasters which have occurred during the past week show in a marked degree the uncertainties of the The French steamer l'Amerique. which has an unlucky record, went ashore near Long Branch while in the hands of a pilot whom, we may suppose, was a competent and intelligent navigator. Fortunately, as in the two previous accidents to this ship, no lives were lost. The other disaster was the sinking of the steamer Montgomery, en route from New York to Havana, from the effects of a collision with the steamer Seminole, on her way from Savannah to Boston. In this case here was a considerable loss of life, including four passengers and nine of the ship's company. This is not to be wondered at, considering the fact that the Montgomery sank in six minutes, showing that she was probably cut nearly in two by the Seminole, which struck her amidships, the course of the two vessels being nearly at right angles. Unfortunately, they teach us nothing which will enable us to guard against like disasters in future.

Production of Pig Iron in the United States in 1876.

The forthcoming issue of the Bulletin of the American Iron and Steel Association will contain the following:

Below we present a table embracing a earefully prepared estimate of the production of pig Iron in the United States in 1876, and of the stocks of pig iron carried forward into the year 1877. Since the publication by us of a similar table in January of last year we have greatly perfected our means of acquiring information from the furnaces, and we submit the accompanying estimate with great confidence in its substantial accuracy. The figures contained in the table which follows were obtained in part directly from the producers, and in part from a corps of one hundred special correspondents of this office, residing in every district in the country which makes pig ironcorrespondents selected by us because of their experience and judgment as iron manufacturers and business men, and because of the superior interest for the metallurgist.

facilities possessed by them for procuring the information we desired.

Our method of procedure in acquiring information not obtainable on short notice direct | near the Corliss engine, showed samples of their less. ly from the producers has been briefly this: A steel in the bloom, ingot and sheet, as well as correspondents about the middle of December, | right of the main display, facing it, was a pile giving them the exact figures of production of ingots from 143 to 295 lbs. in weight, a simiand requesting that careful corresponding esti- lbs., and a smaller pile, oval shaped, weighing mates for 1876 be sent to us not later than De- from 8 to 22 lbs. These blooms were for use were a matter of record in this office. With rear of their large display board were shown the figures for his district for 1875 before him, some specimens of sheet steel and saw plates, duction and sale of pig iron could not have quality of the steel by the reputation which the much difficulty in making an approximately goods manufactured from it have obtained, we 1876 in producing and selling iron; if more the highest praise. The advantage to this firm than in 1875, how much more; if less, how of making their own steel must be evident. It much less. If we could hear from every cor- gives them an absolute control of the product, respondent, we would have a close approxima- and secures that uniformity which is so essention to the exact figures of production and tial, and which is so much more easily attained unsold stocks in 1876-close enough for all when running so constantly on one grade, as in practical purposes, and abundantly sufficient to the nature of their circumstances they must do satisfy the wants of the trade. Exact returns than when constantly changing. This house from every furnace in the country, we have began the manufacture of steel in 1854, and obtained in less than three or four months after 6 heating furnaces and 1 hammer, giving an anthe close of the year for which statistics are nual capacity of 2500 tons. desired. Rather than keep American ironmasof presenting a close estimate early in January,

We are pleased to say that we have heard iron in 1876, and from more than one correspondent in almost every district. We have also | ble steel. heard directly from many producers. The aggregate returns are as follows:

States	Produ Net t		Stock of Dec Net	
Districts.	1875. Exact figures.	1876. Estima- ted.	1875 Exact figures	1876. Esti- mated.
New England New York New Jersey, Pennsylvania Maryland Virginia North Carolina Georgia Alabama and Texas	\$6,581 266,431 64,069 960,884 38,741 29,985 800 16,508 25,106	18,000 181,000 31,000 989,000 20,000 6,000 15,000 29,000	246,908 13,767 9,749 3,400 20,921	4,000 4,000 3,000 20,000
West Virginia Kentucky Tennessee Ohio Michigan Indiana	25,277 48,339 28,311 415,893 114,805 22,061	45,000 35,000 27,000 383,000 84,000 13,000	52,167 6,381	31,000 2,000
Illinois. Wisconsin. Missouri. Pacific States aud Territories	49,762 62,139 59,717 1,150	53,000 51,060 69,000 1,000	10,392 61,769 454	55,000
Total			-	660,000

Pennsylvania. Lehigh Valley... Schuylkill Valley... Up'er Susquehanna. Shenango Valley... Allegheny County... Miscellaneous bitu... Charcoal... 260,000 50,878 43,000 129,000 79,155 114,000 77,000 13,980 29,000 101,000 19,168 19,000 150,000 35,097 30,000 135,000 4,930 2,000 130,000 21,333 22,000 17,000 22,392 16,000 Total for Penna. 989,000 246,908 275,000 960,884 Ohio. Hanging Rock bi-36,899 35,000 17,528 15,000 tuminous.

Hanging Rock charcoal.

Mahoning Valley bituminous.

Miscellaneous bituminous and charcoal. 67,418 40,000 53,882 38,000 115,993 134,000 14,611 21,000

American Steel at the Centennial.

205,588

Total for Ohio ..

174,000 42,017 50,000

415,893 383,000 128,033 124,000

(Continued)

We give below further descriptions of the American steel exhibits, which, with what we have given in previous issues, comprises all the displays of steel and steel castings except Bessemer, which will be reserved for future consideration. Owing to the crowded state of our columns for many weeks past, we have been compelled to defer these notices longer than we had intended:

HUSSEY, WELLS & CO.

In our former notice of the display of this firm we omitted to mention what was by far the most interesting portion of their exhibit, ment in the Government Building, Though ore, muck bar and finished steel were shown, the special point of interest was the two series of four crucibles, each showing the gradual conversion of iron into steel when beated in connection with chemicals. To show this, the crucibles were subjected to heat for different periods of time, and then cooled, and one side of the crucible removed to reveal the effect of the heat. One series of crucibles showed tool steel and the other common. Of the four crucibles in each series, No. 1 had been heated 114 hours; No. 2, 2 hours; No. 3, 21/2 hours, and No. 4, 3 hours. The tool steel series was charged with a mixture of cut wrought iron, charcoal and chemicals, and the common steel crucibles with common charcoal iron and scrap examination of the crucibles showed the greater refractoriness of the tool steel mixture. In No. 1 the materials were not melted in the least, even the chemicals being still intact. No. 2 had a very small butten of melted metal in the bottom. In No. 3 the material was about half melted, and in No. 4 fully melted. In the common steel series No. 1 crucible, exposed to heat the same length of time as No. 1 in the tool steel series, had about as large a button of metal as No. 2 of the tool steel. No. 2 of the common was fully melted. No. 3 was more compact, and No. 4 was ready to pour. In No. 3 of this series the surface showed a protuberance due to ebullition. While this exhibit was by no means as attractive to the throng assome others, or as the beautiful exhibit of this firm in the Main Building, it possessed exceptional H. DISSTON & SONS

Philadelphia, in connection with their very exonfidential letter was addressed to each of our shaped blanks for saws, trowels, etc. To the of Philadelphia, exhibited some steel castings orrect estimate of the work of the district in have no hesitation in speaking of it in terms of arned in four years of experience, cannot be have now 42 melting furnaces, 2 trains of rolls,

MESSRS, REESE, GRAFF & WOODS. ters waiting so long, we have adopted the plan Pittsburgh, exhibited in the collective display of C. W. & H. W. Middleton samples of the the machinery for obtaining which is above ex- various grades of crucible steel made by them, such as machinery, spring, shear, sheet, plate, tool and special steels for agricultural purdirectly from every district which made plg poses. This firm is one of the very few in the country that manufacture both iron and cruci-

> THE BAY STATE IRON CO. Though this company object to the classification of their homogeneous boiler plate made on the open hearth principle as steel, we place it under this head for the reason that we have placed here all others of the same class. Their exhibit in Machinery Hall was mainly, if not entirely, of homogeneous metal, flanged, twisted, bent, and some test pieces, both of plates and bars, which showed a thoroughly nomogenous metal, an i, judging by the fracture, well adapted to its use as boller plate. Some of the larger bars that have been polished and twisted cold showed a remarkable freedom from chipping on the edges.

> COLLINS AXE CO. This company made no display of crude steel, but the tools exhibited in the Main Building may be taken in part at least as samples of the steel made at their works at Collinsville, and the plows in Agricultural Hall of their cast steel or steel castings, of which they were among the earliest manufacturers in this

> > MR. J. C. BIDWELL,

country.

of Pittsburgh, in connection with his display of plows, etc., in Agricultural Hall, had a display of steel castings that was worthy of a far better position, and a location among our best American iron and steel exhibits. Notwithstanding troubles in the past, and in spite of the fact that all parties manufacturing steel castings are not successful, there can be no doubt that the use of steel in castings is rapidly extending. We speak now of cast steel and not of iron castings converted or case hardened. It is claimed for these castings, and so far as our knowledge goes, with justice too, that they are an invaluable substitute for iron castings, or expensive wrought iron forgings, where great strength and durability are required. Mr. Bidwell is making all kinds of ast steel castings to pattern under a patented and improved process, of superior quality, close in grain and capable of receiving the fluest finish. The steel is made principally of Norway iron, and melted in crucibles. It can be hammered, drawn out, and given any required temper, and is especially adapted for ail descriptions of machine and railroad castings. To show some of the uses to which it is put we may mention that among the exhibits were samples of links, connecting rods, cog wheels, pinions, plow-shares, fifth wheels, wagon skeins and axle boxes in great variety, finished and unfinished, all sizes, wrenches, 11 different sizes, etc. Among the most interesting samples were two large nuts similar to those made for the Bonanza Mines. The nuts weigh 100 lbs. each, and are used on mine pumps.

STANLEY G. FLAGG & CO., 216 and 218 North Third street, Philadelphia, made a display near the Corliss engine, in Machinery Hall, of what they term steel castings, though we judge that the castings are not crucible steel but are converted. The display consisted of a large number of articles, such as nuts, bolts, wrenches, hammers, file blanks. vise jaws, shuttles, pruning shears, gas pipe tongs, carriage hardware, gearing, cranks, cross heads, connecting rod yokes, etc. Two brands are made, known as "Keystone" (cupola) and Union" (air furnace). In regard to these and their process, which is patented, they say: "By with charcoal and chemicals. Even a cursory this process we are enabled to make these castings of any desired pattern, weighing as small as one-half ounce, with the advantage of not being smallest iron casting; possessing also solidity, durability, and great tensile strength, such as are required where steel and wrought forgings have heretofore been used. The castings designated as the Keystone brand are particularly adapted for small articles, such as sewing machine parts, firearm parts, &c., requiring a fine. soft casting, easily worked, and are possessed of a very essential requisite, viz., that of being easily hardened. The castings designated as the Union brand are particularly adapted for larger articles, such as parts of machinery, agricultural implements, &c., and are very strong, soft, and solid, and free from flaws and imperfections. All castings made by our process are susceptible of receiving a very fine electrical apparatus.

polish, and are an invaluable substitute for wrought and steel forgings, where great tensive display of saws, files and other tools strength is required, and at a price materially

CARR, CRAWLEY & DEVLIN

which were made to order, being molded over patterns the same as other castings, and bearand stocks in their respective districts in 1875, lar pile of hammered blooms from 130 to 275 ing the same relation to worked or forged steel that malleable iron castings do to wrought or forged iron. They are used as a substitute for cember 31st. We could send our correspon- in saws. There were also some specimens of forgings of steel or wrought iron when great dents the exact figures for 1875, because they homogeneous boiler plate, flanged. On the strength of material is the principal thing desired. The strength of these castings, as determined by Prof. Thurston, was found equal a first-class business man engaged in the pro- and also some trowel blades. Judging of the to a tensile strength of 35 tons to the square

The Industrial Uses of Asbestos.

A writer in the American Exchange and Re

The daily increasing importance of asbestos connection with packings, bearings for journals, coverings for boilers, and similar purposes, has directed attention to other applications and uses of this material, and to the patents under which exclusive rights to its employment are claimed. Being a natural aubstance, long known as a possible substitute for animal and vegetable fibers, and its refractory and lubricating properties recognized for hundreds of years as its peculiar characteristics, it would seem improbable that any exclusive proprietorship, based on the utilizing of these properties, could be claimed or acknowledged at this late date; yet it is by no means uncommon to find advertisements implying the right in some party to the sole use of asbestos for this or that purpose, or to find that capitalists have been induced to invest their money in the experimental manufacture of asbestos products, to be protected under the patent laws.

Asbestos, or amianthus, is a mineral of a white or greenish-white color, found in dense heavy blocks capable of being divided into fibers of greater or less flueness and length, and resembling hair silk; it is smooth and unctuous to the touch, and, like plumbago, these qualities are available for lubricating or anti-friction purposes. The mineral is extensively distributed, but much of it is coarse, discolored, or in a disintegrated condition, which renders it unserviceable for any purposes to which asbestos has yet been applied. The finest beds are in Corsica and Italy, but a very fair article is found extensively in Canada, Pennsylvania, Maryland, Virginia, and other places. Efforts to utilize this mineral were early made in the historic period, and one of the first applications was in the manufacture of incombustible fabric. For this purpose vegetable filaments were combined with the mineral fiber, to give strength and consistency during manipulation, the vegetable fiber being burned away after the formation of the fabric. Notwithstarding this fact the combination of asbestos and animal or vegetable fiber has constituted the basis of many patents, some of which are in existence, while others have expired. An English patent, No. 145, for the year 1857, describes a lamp wick of silk and asbestos woven together. Prior patents describe wicks wholly of asbestos; and a later patent, No. 2647, for 1865, describes the plaining of asbestos in a braiding machine, and also felting it or weaving it into ordinary fabric, to be used for lamp wicks. As a fabric, asbestos was once used in the manufacture of shrouds. One of the earliest applications was in the form of paper, and the efforts to render it available for this purpose have been most persevering and unremitted to the present time. An early description of the mode of making asbestos pulp for paper is contained in an English patent, No. 1413, for the year 1853, the process consisting of boiling the mineral, dividing the fibers, and mixing alum therewith. Advantage was early taken of the non-conducting qualities of asbestos in the construction of safes-a reference to its use for this purpose being made in an English patent of 1834, No. 6555-but it was not until 1870 that it was applied as a non-conductor in refrigerators, when F. Hyatt obtained a United States patent for a refrigerating car. Being flexible, non-combustible, and a natural lubricant, its employment as a packing for pistons naturally resulted. Its adaptation for such purposes is fully set forth in the United States patent for steam engines, obtained by Israel Jennings in 1828. Notwithstanding this fact. several existing United States patents have claims for the use of asbestos for packings and joints, while others claim imparting to it a rope form for packings, which is clearly described by Jennings. Other patents have been granted for the application of asbestos to journals or bearings, notwithstanding the existence of Jennings' patent, and also of an English patent, No. 2048, of 1853, for a lubricating combination of asbestos, quicksilver, fats and oils. A combination of asbestos, souptone and cotton is described in P. S. Devland's patent of August 22d, 1865, C. A. Stevens' patent of March 29th, 1870, claims the insertion of a cord in a rope packing of asbestos to strengthen it: and Morris Botticher's patent rough or porous, but as perfect and true as the of October 4th, 1864, refers to the use of the mineral for packing in a loose mass of fiber. A combination of asbestos with plumbago and iron filings is claimed in P. J. Kelly's patent of November Sth. 1870; and a combination of asbestos and clay in Lanbercau's Engnation of asbestos and clay in Lanbercau's English patent, No. 213, for the year 1859, where the mixture is shown molded into bricks or forms for linng fire-boxes. Combined with felt or pulp, and made into sheets, asbestos has been for some time applied for roofing, under H. W. Johns' patents of 1868; in 1866 it was applied to carburetters, as specified in J. A. Bassett's patent of September 18th; William Beschke's patent of August 14th, 1866, its use in lamps, to altsorb the oil and prevent sta 55. lamps, to absorb the oil and prevent its dis-tribution in case of fracture of the lamp; and the English patent, No. 362, for the year 1865, is based on the insulating property of abestos, and its use as a non-conducting material is electrical apparatus.





CENTENNIAL EXHIBITION IPRIZE MEDAL AWARDED.

WARRANTED.

Stronger than any other, whether of Foreign or of American make; always parallel and holding with a tighter "grip." The jaws are of convenient snape for the workman to get near his work equally well for fling or chipping, tastead of the heavy, claimly formed jaws of the casi roo. Single Screw Vises of the countmon "parallel away of the casi roo. Single Screw Vises of the countmon "parallel "Peter Wright" Leg Vise, of strength and lightness, fastening to the floor and bench, and at the same time greatly superior to it; is always perfectly parallel at all points of opening, and never gets out of line. We now tearrant these Vises for three years from date of manufacture stamped upon each.

The Jaws are of best Tool Cast Steel, welded on, file cut and properly hardened. The screws are forged of the best refined iron, and work in notice text thread boxes. The lower screw maintains the parallel position of the two jaws, by having exset motion with the upper working screw through the connecting chain which regulates it. The chain has no strain of the work upon it, and is therefore as durable as all the other parts.

No. 2, Jaws 4½ in. x 1 in., Screws 1½ is. diameter, Lever 23 in. long, opens 5½ in. x 1½ is., Screws 1½ in. diameter, Lever 16 in. long, opens 6½ in. x 1½ is., Screws 1½ in. diameter, Lever 16 in. long, opens 7½ in. x 1½ in., Screws 1½ in. diameter, Lever 19 in. long, opens 7½ in. x 1½ in., Screws 1½ in. diameter, Lever 24 in. long 20 00 No. 5, Jaws 2 in. x 1½ in., Screws 1½ in. diameter, Lever 24 in. long, opens 10 in. 2 00 No. 6, Jaws 8 in. x 1½ in., Screws 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 6, Jaws 8 in. x 1½ in. diameter, Lever 26 in. long, opens 10 in. 30 00 No. 4, Jaws 8 in. x 1½ in.

same price.

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THE DUNLAP CAN OPENER.

PATENTED February 29, 1876

DA:MAN Standard Hollow Augers,

Spoke & Dowel Trimmers The very best as well as cheapest.

Metallic Combination

Plow Plane, Made of solid cast steel and of gun metal. Of an entirely new design. Can be used as Groover, Dado and Rabbet Plane, in any direction of the grain, and also as a Match Plane.

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To cut lead pipe in any position and without chips or burs.

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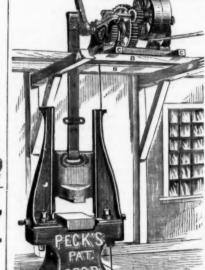
Harvey's Patent Cleaned Smooth

Planished (Am. Russia) Sheet Iron,

Manufacturers of the following Patented Articles of MALLEABLE IRON:

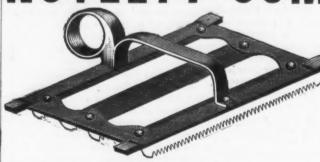
Hammer's Adjustable Clamps. Hammer's Malleable Iron Oilers. Hammer's Mall. from Hand Lamps. Hammer's M. I. Hanging Lamps.

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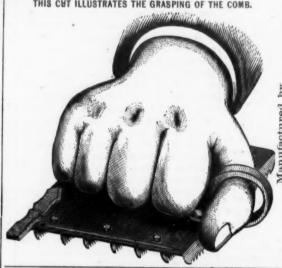


WHY THE BEST:

It requires less power, works faster, gives a harder blow with same weight of hammer, the rebound of the hammer is caught without lessening the force of the blow, the blow is uniform and not affected by variations in the speed of the driver. It is always in order, The Drop Press a specialty.



THIS CUT ILLUSTRATES THE GRASPING OF THE COMB.



HAMMERED MO FINISHED



The Ausable Nails

Are Hammered Hot,

And the Finishing and Pointing are Done Cold,

Thus Imitating the Process of Making Nails by Hand.

Quality is Fully Guaranteed.

For Sale by all Leading Iron and Hardware Houses,

ABRAHAM BUSSING, Secretary, 35 Chambers St., New York.

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Assorted sizes for Straight, Circular and Half Circle Printing. These letters CHANGE to form any NAME, WORD or SENTENCE AT PLEASURE. Millions retailed yearly for Bag Plates, &c., marking Robes, Show Cards, and 1000 uses. SUPERIOR TO ALL OTHER STENCILS.

Also Ink and Brushes. Send Postal Card for Samples, new Price Last and Illustrated Circular O. G. BRYANT, 102 Washington St., CHICAGO.

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Improved Boiler Plate Bending Rolls, Boiler Plate Planing Machines, COMBINED

unching & Shearing Machines Single Power Punching Machines,

ith Shearing Attachments for Rolling mills,
Boiler Makers, &c.

Attachments furnished for punching Nuts
and Washers complete at one stroke. and washers complete at one stroke.

Rotary Shearing Machines, Steam

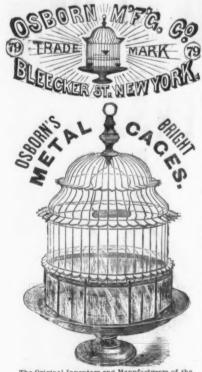
Engines, with Teal's Balance

Slide-Valves.

Improved Hair Picking & Cleaning Machines, and

Machinery in General.

4116 Ludlow St., Philadelphia



OSBORN BRIGHT METAL CAGES.

Also OSBORN & DRAYTON improvements under tweive different patents. We are continually bringing out new and beautiful designs to meet the demands of ALVAN DRAYTON, General Agent.

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Patented June 3, 1862; — April 6, 1869; Dec. 23, 1873; Jan. 20, 1874; Dec. 22, 1874; April 20, 1875.



WATERS' IMPROVED Pruning Implements



E. S. Lee & Co.,

1876. ANIMAL TRAPS

THE SELLERS MFG. CO., 707 Market Street, Philadelphia, 83 Reade Street, New York.



For sale by all HARDWARE JOBBERS.

A. A. IRVINE. COMMISSION MERCHANT, AND

Manufacturers' Supplies. No. 14 Murray St., New York.



Efficient, durable, and easily cleaned. Supplied to te trade only. Samples sent free to responsible ouses. Agents wanted in every State. Send for filus-ated circulars and price list to ROBERT CRANS, Jr., Columbia, Lancaster Co., Pa.



JAS. CLAYTON, Manufacturer of Water, Air, and Vacuum Pumps and Air Compressors. Send for Illustrated Cir-culars.

11 & 16 Water St., Brooklyn, N. Y. . R. REGER,

PATTERN AND MODEL MAKER,

Bear of 241 Arch St., Philadelphia.

AMERICAN SCREW CO., Providence, R. I.

Manufacturers of

IMPROVED

Gimlet Pointed Wood Screws,

Patented

1876.



After forty years' experience we offer to the trade our Centennial Screw, patented May 30, 1876, as the best we have ever known.

The method of manufacturing is also patented, and we are changing our machinery as fast as possible, to manufacture the improved article only. To introduce them, they will be sold at same price as the old style screw.

The new screws will be packed in manila colored boxes with new label covering end of box, and enlarged figures showing plainly contents.

To distinguish this screw we have adopted a trade mark, which is also secured to us. Section at Line A B Section at Line C D Section at Line C D Section at Line E F Section at Line E F

The above drawings show the progress of screw making from the old blunt point to style now adopted.

Experience has shown that the weak point of screws, as formerly made, is at the heel of the thread, where all the strains of forcing the screw into the wood naturally concentrate

To avoid the sharp angle existing in the old style of screws has been the aim of all manufacturers, but every expedient hitherto adopted has proved as objectionable as the evil complained of.

It will be seen in our new screw that not only is the sharp angle avoided, but the strength very much increased, as illustrated above. See sections at lines.

CLAIM.

"A Pointed Wood Screw naving the outer periphery of the thread upon its body cylindrical, while a portion of the body below the thread and near the neck is conical, the remainder of the body to the point being cylindrical, and yet having all the thread brought to an edge of a constant angle, without jogs in the paths) between the threads, substantially as described."

WOOLLETT'S

VILLAS AND COTTAGES;

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A Book for the People.



showing Plans, Elevations and Views of Twelve Villas and Ten Cottages.

Being a collection of Dwellings suited to various adividual wants, and adapted to different locations.

WM. M. WOOLLETT.

Fellow of the Am. Institute of Architects.

LIST OF ILLUSTRATIONS.

VILLAS.

1 1 Basement, 1st and 2d story plans of Frame Villa. Scale indicated on plate.

2 Perspective view.

3 Perspective view, Frame Villa House. Plane similer to Design Fo. 1.

1st and 2d story plans of a Brick Villa. Scale indicated on plate.

5 Front elevation of Villa. Scale indicated on

7 Ground and 2d floor plans of Brick Villa. Scale indicated on plate

9 1st and 2d floor plans of a Frame Villa Scale indicated on plate.

6 11 1st and 2d story plans of a Frame Villa.

6 12 Perspective view.

7 13 1st and 2d story plans of a Frame Villa

7 14 Front elevation.

9 16 1st and 2d story plans of Brick Villa. Scale indicated on plate.

10 18 1st and 2d story plans of a Brick Villa. Scale indicated on plate.

10 19 Perspective view.

11 20 Perspective view of Brick Villa. Plans similar to Design 10.

12 21 1st and 2d story plans of Frame Villa. Scale indicated on plate.

12 22 Perspective view.

1 23 1st and 2d story plans of a Frame Cottag Scale indicated on plate.

1 94 Perspective view.

25 Perspective view of a Frame cottage. Plans same as Design 13.

3 26 1st and 2d story plans of a Frame Cottage Scale indicated on plate.

Front elevation.

3 28 Perspective view.

4 29 1st and 2d story plans of a Frame Cottage. Scale indicated on plate.

4 30 Perspective view.

5 31 1st and 2d story plans of a Brick Cottage Scale indicated on plate. 5 32 Perspective view.

6 33 1st and 2d story plans of a Brick Cottage.

Scale indicated on plate. 6 34 Perspective view. 7 35 1st and 2d story plans of a Frame Cottage.

Scale indicated on plate. 7 36 Perspective view 8 37 Perspective view of Cottage. Plaus similar

to Design 7. Perspective view of Cottage. Plans similar to Design 7.

10 39 1st and 2d story plans of a Brick and Frame Cottage. Scale indicated on plate.

10 40 Perspective view.

This is the most picturesque and pleasing work issued, adapted to the public wants. One vol., oblong 8 vo., of forty 8x12 plates. Cloth; price, \$300. For sale by

DAVID WILLIAMS.

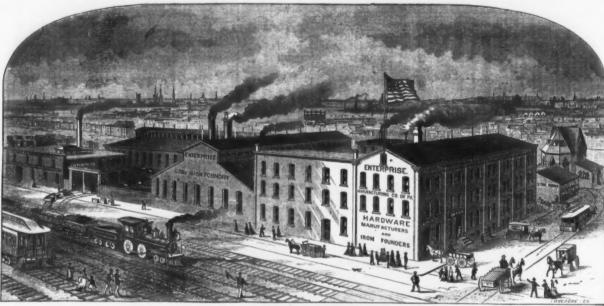
10 Warren St., New York.

Sent, postpaid, on receipt of price.

Works of ENTERPRISE MANUFACTURING CO. of PA., s. w. Cor. American & Dauphin Sts., Philadelphia.

PATENTED HARDWARE MANUFACTURERS.





irons are patented both in the United States and Europe.

furnished either nickel plated or plain polished, as desired

Three irons,

one

handle and a stand constitute a set.

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be vestion and To the Stat disc

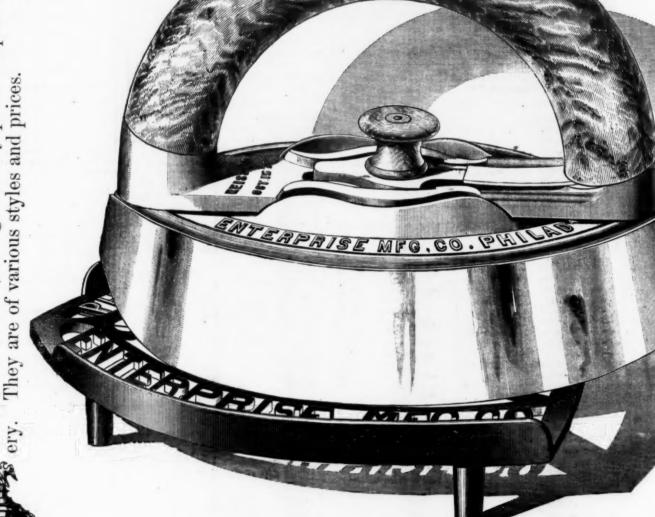
Showing Sausage Stuffer, Fruit, Lard

ducting fire cement, and ground by patent improved machin-

MRS. POTTS' COLD HANDLE, DOUBLE POINTED SMOOTHING

They require no holder or cloth, are lined with non-con-

American Coffee and Spice Mills.





Patent Suction and Force Measuring Faucet. Warranted to measure correctly, and draw a gallon of the heaviest molasses



Self Weighing Cheese Knife and Cover.

Weighs and cuts the choese at the same time-keeps it free from flies

Twenty different sizes, from \$2 to \$100 each. Send for Illustrated Catalogue and Price List, describing these and other valuable articles.

Product of Precious Metals in 1876.

As Wells, Fargo & Co. are the sole carriers States, they should constitute the best authority on its amount. With an intelligent regard for the importance of correct statistics of this movement, Mr. J. J. Valentine, the superintendent of that company, has for years past enforced stringent regulations with a view to pro-curing an exact valuation and record of all the gold dust and gold and silver bullion that passes through the company's hands, as well as what small amounts may be carried through other sources. The returns of Wells, Fargo & Co. have therefore been very properly regarded as the best available evidence of the production of the precious metals, and they doubtless make an approximation to the truth sufficient for all practical purposes. Mr. Valentine's statement of the production coming to market from the States and Territories west of the Missouri River during the year 1876 is as follows:

\$90,875,173	\$51,908,054 \$13,386,543 \$90,875,173	\$51,808,054	\$2,389,089	\$23,391,487	
\$18,615,907 49,286,704 1,149,971 62,372 1,674,961 2,777,002 5,207,519 6,999,647 350,294 1,111,992 1,111,993 1,111,993 1,111,993 1,111,993	\$1,719,940 4,812,079 35,000 350,000 4,973,693 1,961,109 118,621 171,621 18,621 18,621	\$776,308 44,725,808 280,695 281,484 781,484 781,661 385,281 385,281 386,056	\$1,463,596 22,060 329,814 5,670 996,414 195,685 4,779	\$14,635,978 220,803 919,307 56,700 1,182,922 1,986,563 47,765 2,939,877 76,502 106,538 51,980 1,310,515	California Nevada Oregon Oregon Washington Idaho Utah Utah Colorado New Mexico. Arizona Mexico B. Columbia
Total.	Ores and Base Bullion by freight.	Silver Bullion by express.	Gold Dust and Bullion by other convey'ces.	Gold Dust and Bullion by express.	States and Territories.

This statement, it will be observed, does not profess to state anything beyond the value of the unparted bullion, and therefore gives no accurate idea of the actual product of either gold or silver. Mr. Valentine has therefore urdertaken to estimate the proportions of gold and of silver respectively in pure builion and of the quantity of lead and copper in the base bullion. For the purpose of this estimate, he takes the product of the Comstock Lode and of the whole of Nevada as a standard, and reaches this conclusion: "In round figures, of \$37,000,-000 produced from the Comstock Lode this year, \$17,125,000, or quite 46 per cent., was gold; of the whole product of Nevada, 35 per cent. was gold, and of the total silver product, so-called, \$18,647,925, or 31 per cent., was gold. The gross yield is constituted as follows: Gold, 28,501; silver, \$41,506,672; lead and copper, \$5,040,000—\$90,875,173." Applying the ratios thus obtained to the product of each of the last six years, Mr. Valentine obtains the following as the annual production of gold and silver and of the baser metals:

Year,	T'l Product	Lead. &c-	Silver.	Gold.
1871			\$20,286,000	
1872	62,236,959	2,250,000	20,527,500	89,459,459
1978	72,258,693	8,450,000	28,352,100	40,456,598
1874	74,401,015	3,800,000	30,499,000	40,103,045
1875	. 80,889,057	5,100,000	34,043,910	41,745,147
1876	. 90,875,173	5,040,000	41,506,672	44,328,501

exceptions to the statements of product issued in the government reports: "We see no way of reconciling the discrepancy between \$66,-000,000 gold and silver published as the estimate of United States officials for 1870 and \$56,184,000 shown here for 1871, which was a more productive year by at least 4,000,000 than We are confident that similar discrepan-United States exist in the estimates usually accepted for the years from 1870 to 1861 inclusive, and possibly all the way back to 1848." We are quite disposed to think there is good ground for this criticism; for the government reports lows: of production and import combined show surplus of supply over exports so large as to be wholly irreconcilable with any reasonable shaft only is used, dispensing with the use of estimate of the home consumption for the arts and manufactures.

The following is given by Mr. Valentine as the product of gold and silver in the United States each year from the date of the California discoveries to the present period :

1100	•	,	*	C	8	a.	0				•			••	•		ì	۳	۰	•	some berion .		
																					Gold.		Silver.
849																				á	\$40,000,000		
850																				Ī	50,000.000		
851																					55,000,000		*****
852																							\$200,000
833																				ŀ	65,000,000		200,000
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889	Ĺ.																				50,000,000		200,000
860	Ĺ			,																	46,000,000		1,000,000
861																					43,000,000		1,500,000
862																9					89,000,000		3,009,000
868	L																				40,000,000		7,000,000
864	L																				46,000,000		10,000,000
865	L.																				58,000,000		11,000,000
866	Ĺ.																				53,500,000		10,000,000
867																				ļ	£1,500,000		13,000,000
868	L,										9										48,000,000		12,000,000
863	١.																				49,500,000		12,000,000
1870	١.																				50,000,000		16,000,000
871	۰			٠.												ı					85,898,000		20,286,000
572	ļ,																				39,459,459		20,527,500
219	١.			,																۰	40,456,593		28,352,100
1974	ŀ.																				40,103,045		30,498,000
0.19	١,																		0.4		41,745,147		34,043,910
870	,								0										0.4		44,328,501		41,506,675
																			-	-		-	

\$1,356,490,745 \$973,814,199 a steady tendency toward a decrease in the gold yield and an increase in the production of

matter of conjecture; but it cannot be doubted | ye consent and lieve of his said master, nor do, occurred within the last few years has largely of the gold and silver product of the Pacific contributed to the late fluctuations in the price all things, as a good and faithful apprentice of silver.

The Weston Dynamo-Electric Machine.

The superior economy and many other advantages of dynamo-electric machines over batteries for the electro-deposition of metals have rendered these machines much inquired after. We illustrate herewith the Weston dynamoelectric machine, especially adapted to the use of electroplating establishments. It is manufactured by Messrs. Condit, Hanson and Van Winkle, of Newark, N. J. The cylinder D, forming the outside of the machine, is attached to a walnut base. From the interior of this the axis: these are covered with insulated wire. The magnets are so connected that the poles space a shaft connected to the pulley E, is furnished with a series of armatures made in segments, covered with wire, and firmly secured to the shaft. When the shaft is revolved so as to carry the armatures very rapidly past the electromagnets, which have already been charged, currents of electricity are induced in the wires

their direction, a device called a commutator has to be used. The one used on this machine is | it would require 18,550 to make an inch. These very simple in construction, consisting of but sheets were rolled from puddled bar without two pieces of metal, requiring only two springs to carry the currents from all the armatures. 26x43 luches. The iron made from these fur-The springs used, F F, are of thin, hard rolled naces is being used for links in a bridge buildcopper, fixed in adjustable clamps, supported on

that the variation of relative product that has or assent unto anything whereby his said master may by any means be damnified. But in and servant, shall gently and dutifully demean and behave himself during ye said term.' The master agrees to chastise the lad " reasonably."

Me chant Iron at the Centennial.

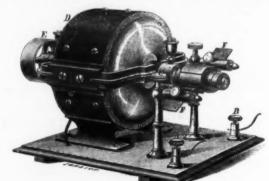
(Continued.)

The display of

GRAFF, BENNETT & CO.,

Pittsburgh, in the Government Building, though small, was to iron workers one of the most interesting in the whole Exhibition, as it showed the results of, at present, the only thoroughly successful, machine puddling even cylinder a number of magnets project toward done. It was entered to show the iron used In the experiments now making at Springfield in modeling our old cast iron ordnance. The are alternately north and south. In the center | iron was the product of the Danks' furnace from the Milivale Works, of the above named gentlemen, and consisted of a puddle ball weighing 2034 lbs., a bloom 1992 lbs., and two puddle bars of 1668 lbs. each. These were not made by welding, but were the results of single heats. In addition there were samples of square iron from 11/4 inches to 2 inches, and samples of surrounding the magnets.

As these currents are constantly changing in thickness to less than one eighteen thou iron from one seven thousandth of an inch sandth. Two sheets were shown so thin that reworking on a set of Lauth's 8-high plate rolls, ing near Pittsburgh, and repeated experiments have shown that bars made from the common When the apparatus is first made the electro- coke irons of the Pittsburgh regions have



THE WESTON DYNAMO-ELOTRIC MACHINE.

tery, or other source of electricity, which breaking. charges the steel plates and renders them permanently magnetic. Now, if a belt from any the armatures are set in motion, weak currents will be induced in the wires surrounding the armatures, which are picked up by the springs, F F, and carried to the two pillars. If the two wires N N', leading from the coils of the electro-magnets be placed in contact with these pillars, the weak currents from the armatures will pass around the electro-magnets and will strengthen them; this will again increase the strength of the currents induced in the armatures, and so on, until a maximum is reached. To utilize the currents from such a machine it would be simply necessary to place the work to be done in circuit with the electro-magnets and Mr. Valentine takes the following important armatures, so that the currents induced in the armatures may pass through that circuit and through the coils of the electro-magnets.

But such a machine would have very limited applications. It could not be used for electroplating, electrotyping, and the other purposes of electro-metallurgy, as the currents resulting from the "polarization" of the electrodes in the vat would, when the speed of the machine cles or exaggerations as to the product of the fell below a certain point, reverse the polarity of the electro-magnets and the direction of the current, undoing what it had previously done and spoiling the work.

Some of the leading peculiarities are as fol-

magnets are attached. One circuit and one extra commutators and brushes. The currents from all the armatures are picked up by two brushes and sent round the electro-magnets. The armatures are constructed entirely of iron. The commutator is outside the bearings. The parts liable to be injured by dirt and oil are thoroughly protected by the nickel-plated cover. The machine has an automatic switch. The armature is constructed with lozengeshaped segments. The parts subject to wear are interchangeable, and can be replaced in a few minutes. In proportion to its power it is both small and light. The ring uniting all the electro-magnets secures an equalization of the magnetic field, and balances the strains upon the armatures and shaft, thus reducing the wear and tear of the machine.

The commutator is placed outside the bearings, and it is not necessary to remove the bearings in order to clean it.

An Old Indenture.-The following is a copy of an apprentice's indenture to the cuttlery trade in England less than seventy years' ago. Times have changed since then, and so have boys: By indenture dated 25 July, 1708, John Curtois, son of Thomas Curtois, of Cunz-It will be seen that, since 1864, there has been barr, eo. York, husbandman, was bound apprentice to Joseph Beal, of Pittsmoor, in the parish of Sheffield, cutler, for 9 years, wages to attend it, inscribed, "Nail Machine of 1876." silver. In 1865 the product of gold was \$53, 16 pence per year. Among the covenants it The whole frame was suspended by chains, 000,000 and of silver \$11,000,000; last year, the is stipulated for the apprentice: 'Fornication made of bent nails, showing their excellent field of gold was \$44,300,000, and of silver he shall not commit nor matrimony contract. great Nevada discoveries; how long they may dice, cards or any other unlawful game or games flukes filled with miniature kegs of "anchor live supplies of the two metals is wholly a said master's service by night or day without handsome shape and finish, and of the best by blasting.

magnets are for a moment connected to a bat- | stood from 55,000 to 71,700 tensile strain before

THE GLOBE ROLLING MILL CO., of Cincinnati, made a very unpretentious display source of power be put on the pulley E, and in the Main Building of their "Globe" brands of iron. The exhibit was in the circular rack form, resembling the racks used for guns. have already spoken at length in regard to these from and their quality. In our issue of Feb. 10th, under the title of "Some American Irons," we said : "The manufacturers say that owing to an increased demand for a better quality of iron than the ordinary charcoal or boiled iron, they sometime since began to make these two grades of iron, which have proved equal to the foreign irons of this grade. These rons are designed to be soft, tough and ex ceedingly strong. In the latter respect it is intended that they should exceed the famous foreign brands of iron." The firm publish two little pamphlets giving information regarding these irons, as well as some lithographic fac sim iles of strain diagrams made at Cincinnati by Prof. Thurston. Four samples were tested: "Globe Norway" "Globe Refined," "Globe Charcoal," "Globe Boiled." In general characteristics these irons are very similar. The toughness of the first is, however, very remarkable, the sample having twisted through 515° before fracture took place. The other samples twisted through from 280° to 340° before finally rupturing, the extension of spikes, nails, channel iron, bars of various stretched ws:

0-82 to 1-106 of their length. The limit

An ALEN & CO.,
of clasticity is very plainly marked in each of Northumberland, exhibited, in connection the irons, occurring in the first two samples af- with the collective display of C. W. & H. W. ter a twist of about 31/2" and under a stress of Middleton, at T 66, Main Building, 85 sizes and 18,750 pounds per square inch. In the last two kinds of cut nails and spikes. These were simthe amount of twist, when the limit of elastic- ply placed on exhibition, and not for competiity is reached, is 7°, and the pressure per square tion. In addition to nails, this firm make muck inch 20,000 pounds. In all of these cases the bars, having an annual capacity of 5500 tons limit of elasticity is high, and entitles these muck bar, 4000 tons nail plate and 2500 tons

E. & G. BROOKE,

country.

Birdsboro, Pa., manufacturers of pig iron and nails, had on exhibition a bandsome pattern nail card, mounted in a walnut frame, placed upon a stand of the same wood, made in the form of steps, upon which were displayed specimens of the iron ores, limestone and anthracite coal used in their blast furnaces. also samples of pig iron, puddled bars and nails. Upon the pattern card were exhibited all the different kinds and sizes of nails made, from a three-quarter inch brad to an eight inch spike. At the top of these were well executed drawings of their rolling mill and uail factory, blast furnaces and coal and iron mines. Around the sides was a border of medallions, made of side below was the figure of a blacksmith hammering out nails by hand, with the inscription of a modern self-feeding nail machine, with a boy quality, between which was suspended a gilt

quality of iron. This firm has the advantage over most other nail works for producing nails of uniformly good quality, as they make their own pig fron from such ores as are best suited for this purpose.

In connection with the exhibit of W. D. Wood & Co., in the Main Building, which we have already noticed,

ALAN WOOD & CO.

of the Delaware and Schuylkill Iron Works, made a very beautiful and interesting display of sheet iron. At one side of the display on the division line between it and the next one. and extending from one aisle to the next, was a large arch supported on pillars made of galvanized iron from their works. All the elements of the pillars and arch were stamped in the metal, the pedestal, base, shaft, with panel, capital and entablature being accurately represented, and the stamping being done without a flaw. Under the arch on the division board were shown full sized sheets of black and galvanized sheet irons of their several brands, all 23x28x96, and weighing 112 lbs. They also showed some fine samples of shovel iron. This firm is one of the largest in the country, having an annual capacity, at their 10 mills, of 16,000 tons of sheet and plate fron. They pay especial attention to gasholder, pan and elbow, shovel, tack, last, stamping, ferrule, head light and jacket

The display of the

WYANDOTTE ROLLING MILL,

in the Mineral Annex, was by no means as complete and excellent as they were capable of making, and though the iron shown was evideutly of a superior quality, it was not attractively displayed. The most important part of their exhibit was the iron made by the Hay process, which gives a metal remarkably free from phosphorus and sulphur, very homogeneous and of great tensile strength. The process consists in the use, in the puddling furnace, of about 5 per cent. of a peculiar iron sponge. This sponge is made in a cupola furnace from ore scrap and clay, the shell being wound with a long coil of iron attached to a heavy galvanic battery. The product tapped from the furnace resembles cinder, or "bull dog," is pulverized and mixed with the charge in the puddling furnace, as before stated. The results of its use are really surprising, even cicder pigs giving a strong iron of great purity. The process is worthy of attention, and we regret that the Wyandotte Rolling Mill did not give a more complete display, with records of material used and results obtained, together with tests, both mechanical and chemical.

CARTWRIGHT, M'CURDY & CO., Enterprise Hoop Mill, Youngstown, O., made an exhibit in the Main Building of their hoops of various sizes. The loose pieces, which were bent back and forth by almost every one who had stopped to examine the display, were sufficient evidence that the reputation of this firm for the quality of their goods is not undeserved.

Among the exhibits of Ohio in the Mineral Annex were some good samples of sheet iron exhibited by

L. B. WARD,

Niles, O. The samples were all boiled iron, not made from knobbled fron, and the specimens of work from it show its quality to be excellent. There were samples of stamped pans stove pipes and flanging that were very good also sheets, 27x24x84, weighing 131 lbs., 136 lbs. and 125 lbs. The sheets were all made from Andrews & Hitchcock's close gray black band pig iron.

THE INDIANAPOLIS ROLLING MILL CO. exhibited in the Mineral Annex to the Main Building, in connection with the exhibit from Indiana, samples of coke, pig and fron rails. This is one of the few rail mills in the West that has not succumbed to the panic, but has kept in operation almost constantly.

NEW ALBANY IRON WORKS made a display, in connection with the Indiana exhibit in the Mineral Annex, of a variety of articles of their manufacture, such as muck bar, fibers being from sizes, bent and twisted, both hot and cold.

from to rank among the best from made in this nails. Their mill has 21 nail machines.

THE PERU STEEL AND IRON CO., Clintonville, N. Y., exhibited in the Main Building samples of the Palmer ore, both in mass and separated, a loop of iron weighing 480 lbs. and shingled loop of 450 lbs.; also three samples of Peru billets, with nail rods and horseshoe nails made from the same.

New Caledonia has export peabout 2000 tons of nickel since the discovery of nickel ore at Mont d'Or in 1874. The ore is found in various localities, but the hopes of an extensive product raised by its wide distribution have not been realised. According to the account the product so far has been distributed as follows: The Box Kaine sends away from Canala to Germany every month about 135 tons; the Bel-Air mires at nails, in which were represented views of Quailon have raised 1200, of which 160 tons miners, puddlers and rollers at work, and on one were sent to Loudon at the beginning of 1875. In April, 1876, 550 tons were shipped for Havre, and in May, 430 tons. The remaining mines, "Nail Machine of 1776;" on the opposite side all told, including the Fatma mines, have not sent away more than an aggregate of 100 tons. The use of nickel in manufacturing is daily in- furnace until 1846, and cleared considerable creasing. Its application to exposed metal work is most extensive, and its fine luster, durability and cheapness, increases its uses for or-\$41,500,0000. This result is due mainly to the Taverns or ale-houses he shall not frequent, at anchor, designating their trade-mark, with the namental purposes. The only deposit of nickel worked in the United States is in Lancaster hold out and maintain this change in the rela- he shall not play, nor absent himself from his brand nails." The nails exhibited were of sounty, Pennsylvania, where the ore is mined

The Centennial in England.

At a meeting in London of the British Society of Arts, on the 20th ult., Prof. Archer, the British Executive Commissioner to the International Exhibition at Philadelphia, read a paper on the Centennial, of which the London Morning Post gives the following report:

The exhibition took its origin from the de sire of the Americans to celebrate in some expressive and significant manner their Centennial anniversary, and the deep seated love which exists in the hearts of most Americans for the memory of our lamented Prince Consort had no small share in leading them to choose what he considered a festival of peace and industry as the best means of securing the co-operation of all other nations in their national thanksgiving. The capital required to establish the exhibition was raised by a Centeunial stock and a general subscription by each state; and the organization by which it was carried out consisted of an executive and other sub-committees, including the Women's Committee, which organized a special exhibition for the proper display of women's work, which formed a unique and interesting feature in the general plan. The buildings were erected in the great public Fairmount Park. The Professor then proceeded to give an account of the Exhibition itself, and its prominent characteristics. In the Women's Pavilion some contributions by our own gracious Queen and Royal Princesses were especially prized, and gave great satisfaction to the management. In the Main Building England and her colonies occupied by far the largest amount of space, while the United States had nearly double as much room.

As a general rule the American exhibits were of such excellent quality and so carefully displayed that the exhibitors were evidently alive to the vast importance of the competition. No one who had only seen their weak efforts in the European exhibitions could have expected such superior manufactures in metal work, textiles, and especially in chemicals, which were shown by them. As to the general success of the Exhibition there could be no doubt. The attendance far surpassed that of any previous exhibition-the total admissions being-cash admissions, 8,004,274; free, 1,906,692; total, 9,910,-966; while the visitors at the London Exhibition of 1862 numbered 6,211,103, and of Paris (1867) 9,300,000. Those results proved that international exhibitions were not played out, but had still a very important part to perform in advancing commercial prosperity and the general interest of civilization. After bearing testimony to the unbounded hospitality of the Philadelphians and to the widespread kind-liness of feeling for England and Englishmen, he remarked that he believed that the effect of the Exhibition on America would be most beneficial. The great cities had received a wholesome and powerful stimulus to strive in the race for higher culture and more sesthetical feeling, and with the general public from all parts the effect would have been to dispel innumerable errors, prejudices and false estimates. Let them hope that their American brethren might realize these and every other possible good from so well conceived and splendidly managed an undertaking as that which they had just so successfully completed.

The chairman said that the Exhibition of Philadelphia was, without exception, the greatest exhibition ever held in the world, and it had constituted a happy means of celebrating the centennary of American Independence. It was exceedingly appropriate to have such a paper as Professor Archer's read before this society, for in that hall, under the auspices of Prince Albert, the great movement was started which resulted in the Exhibition of 1851, and the society's initiative had been followed by many of the civilized nations of the world. He, the speaker, visited Philadelphia a few years ago, but he did not stay long enough to see much of the place. He, however, saw the great Fairmount Park, which was 12 or 13 miles round, and, being intersected by rivers, the scenery was very beautiful. There could not have been a better place for the Exhibition. The Americans take up things in a wonderful way; they like to do them on a giant scale, and they certainly succeed. As to their hospitality, they gave free passes from one end of the Union to the other; they entertain visitors at their houses and their botels in a most lavish manner; they like to make a Britisher feel free of the country, and there was a real good feeling toward this country underlying all their tall talk. Indeed there was a strong undercurrent of love for England in America, and it was especially concentrated on Queen Victoria. If Her Majesty could visit America there would be no bounds to the expressions of respect and affection that the Americans would pay her.

After a few remarks by Messrs. Hyde Clark, Botley, Cook, Brown and others, the proceedings terminated.

Mr. John Eilison, a wealthy ironmaster, of Ironton, Ohio, died at that place a few days ago. He was born near Manchester, Adams county, Ohio, August 18, 1806, and was consequently a little over 70 years of age, a fact that suggested the text for the funeral sermon, 90th Psalm, 10th and 12th verses. He moved to Lawrence county in May, 1830, first stopping at Hanging Rock where he kept the warehouse for a couple of years. He then went to Pinegrove Furnace, which he managed until 1843, most of the time possessing a rental interest. In that year, he moved to Jackson Furnace. which, in company with M. R. Tewksberry and Jas. Richey, he purchased. He managed that money, then sold the furnace for a good deal more than was paid for it. In 1846 he came back to this county and went into Etna and Vesuvius furnaces with Messrs. Rodgers and Dempsey, the firm being Dempsey, Rodgers, & Ellison. At Etna he remained until about three years ago, when he purchased a residence and moved to Ironton.

Interest.

The venerable Horace Greeley was right when he advised all young men to receive inter est, but not to pay it. Suppose a young man at the age of 18 should purchase a farm for \$2000, to be paid in one year with interest. It will make a great difference with the result of his life's labor at the age of 79 whether that year's interest be reckoned at 3 or 6 per cent. The difference in interest for the year at the two rates is \$60; which on compound interest at 6 per cent. will amount in 61 years to \$2098.02, or more than the original purchase money for the property. Again, suppose Captain Newport with the original settlers of Jamestown, Virginia, in 1607, had bought the entire territory of the United States for \$1 and compound in terest at the rate of 10 per cent., payable in 269 years, there would be due this year, in round numbers, \$136,000,000,000, or over five times the value of all the property, personal and real, in the nation, estimating the present value at \$26,000,000,000. It is stated that the Dutch settlers bought Manhattan Island from the Indians for 60 guilders (\$24). This sum with ompound interest to the present time, at the rate of 7 per cent., would exceed the present market value of all the real estate in the county of New York. Allowing that the original outfit of Christopher Columbus on his first voyage of discovery to America, in 1492, cost no more than \$5000, that sum with 6 per ceut, compound interest would now amount to \$17,895,700,000,-000, a sum exceeding the entire cash value of the continent, enhanced by the labor and capital of its millions of people, both the living and the dead, and would give to each man, woman and child of the 85,000,000 of present inhabitants \$200,000, which would yield at 7 per cent. interest an annual income to each of \$14,000. The annexed table illustrates the prodigious power of a small increase in the annual rate of interest upon the ratio of the increase of the gross amount, when running through any considerable period of years:

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W. & A. C. SEMPLE,

44 Third St., LOUISVILLE, KY. We solicit the business of manufacturers who are estrous of being represented in this market. SPECIAL NOTICE.

The undersigned here to state to manufacturers, mining and land companies, that he continues to devote his attention to the trausies than of pamoblets, scientific treaties, caralogues, and circular letters, from and interest ENGLISM.

SPANISM.

Having been employed in consular and other traubictions of late, years under authority of the government of the pressure of the kin! by the Evening Post, The Iron Age, Daily Bulletia, Commercial and Financial Chronicle, El Cronista, and other leading New York papers, as well as by a number of American manufacturers and land companies, he has had constant experience, specially in technical terms and phrasecology, slwsy the most difficult to master in the various languages. A saty of eight vesse in Spain, South and Contral America, Mexico, the West hades and France and her colonies, and of it years in this country, is the best guarantee that what he undertakes as a transistor is correct.

C. KIRCHHOFF, Metal Reporter of "The Iron Aye,"
Box 2806, P. O., New York.

Trade Report.

Office of The Iron Age. Wednesday Evening, Jan. 10, 1877.

During the past week the financial markets have been quiet. The death of Mr. Vanderbilt produced no effect on the street, where it had been discounted three months ago. Early in the week the money market was active at 7 @ 7, gold, on call, but later the rate declined to @ 7 per cent. The discount rate on prime business paper is 5 @ 7 per cent.

The gold market has been affected by the presence of an enormous stock of coin here, and the premium declined to 105%-the lowest quotation since June 14th, 1862. The following table shows the daily range of the pre-

Highest.	Lowes
Thursday 107	106
Friday 106%	106
Saturday	106
Monday106%	106
Tuesday106%	105
Wednesday10634	105

The bond market has been fairly active, and the demand good, but the currency quotations have declined somewhat, in sympathy with the decline in the gold premium. State bonds are dull and steady, and railroad bonds strong. We give below the closing quotations of governments. The stock market has been quiet, prices advancing until Monday, when they began to decline. The principal dealings have been in Lake Shore, Western Union, D., L. & W., N. Y. Central and N. J. Central, We give below the closing quotations of active shares.

The following is a comparison of the bank averages for the past two weeks :

Dec. 30.	Jan. 6.	Diff	erences.
Loans \$258,328,600	254,800,100	Inc	\$1,471,500
Specie 83,049,700	38,370,800	Inc	5,821,100
Legal tend's. 84,975,100	35,283,200	Inc	308,100
Deposits 212.461,100	220,783,600	Inc	8,342,500
Circulation 15,268,700	15,503,400	Inc	234,700

The foreign trade movements for the week are shown as follows:

IMPORTS.

For the week ended Jan. 6:

Total for week . \$5,803,864	\$7,528,539	\$5,259,709
Since Jan, 1\$5,803,864	\$7,528,539	\$5,259,709

Among the imports of general merchandise were articles valued as follows:

			The state of the s	A SPICE OF
Anvile			79	726
				759
				27
		8		
Cuttery.				16,92
Guns				1.070
				466
				8,603
ron, pag	tons		60	13
Iron, cot	ton ties			
Iron, oth	er, tons		141	8,74
lron ore			1,292	2,433
Metal go	ods		131	11,580
				990
				8,159
				738
				1,326
Saddlory			4	495
Steer's			550	11,425
Steel			4	878
Silverwa	re			
Tin, box	(68		12,613	71,373
Tin. 6.17	4 slabs		388,774	61,681
Wire				2,061
				1
	EXPORTS	EXCLUSIVE	OF SPECIE.	

For the week ended Jan. 9:

For the week Previously reporte	1875. . \$4 224,416 d 4,249,239	1876. \$5,169,396 4,012,328	1877. \$3,981,539 6,958,910
Since Jan. 1	. \$8,473,655	\$9,181,794	\$10,940,449

EXPORTS OF SPECIE. For the week anded Ian A .

FO	Luc	w	CCM	CII	uc	24		(A)		*	•	
Total	for th	ne	wee	k							0	0

Government bonds at the close were	firm at
the following quotations:	
Bid.	Asked
U. S. Currency 6s	122
U. S. 6s 1881. reg 118%	11334
U. S. 6s. 1881. con	1183
U. S. 6's, 1865, reg	1094
U. S. 6's, 1860, cou	1094
U. S. 6's, 1865, new reg	109%
U. S. 6's. 1865, con	1093
U. S. 6's, !867, reg	1123
U. S. 6's. 1867, CCI	118%
14492	440

U. S. 10-40 reg112	112%
U. S. 10-40 cou	112%
U. S. 5s. 1881, reg	11134
U. S. 5s, 1881. cou	11136
II. S. 416a, 1901, reg	10746
U. S. 5p, 1891, cou	
The following were the closing quota	ations of
active shares:	
P1-1	Ashad
Bid.	Asked.
Atlantic and Pacific Telegraph 15%	16
Chicago & Northwestern 36	361/6
1101	56%
Chicago, Rock Island and Pacific 101	101%
Chic., Bur. & Quincy117	118
Col., Chic. & Ind. Cent 336	3%
Clev. Col., Cin. and Indpls 37%	39
Cleveland and Pittsburgh 90	90%
Chicago & Alton	100
" Preferred 109	110
Canton 25	31
Del., Lack. and Western 76%	76%
Delaware & Hudson Canal 72%	73
Adams Express 101	10136
American Express 5136	46
United States Express 58%	59
Welis, Fargo & Co. Express 85 -	8536
Erie 9%	936
Harlem136%	187%
Hannibal & St. Joseph 1834	13%
" Pref 25%	2736
Illinois Central	63%
Lake Shore	5436
Michigan Central 47%	47%
Milwaukee & St. Paul 19%	19%
Pref 5234	5934
Mariposa 634	734
1. Pref 6%	. 736
New York Central 101%	101%
New Jersey Central 36	36%
New Jersey Southern %	36
Ohio & Mississippi 7%	736
Pref 1274	18%
Paeific Mail, 28%	24
Panama129	-
Pacific of Missouri	8%
Quicksilver 14%	16
" Pref 81%	223/
St. L., Kan, City Northern 4%	836
A 1 01	2636
Tol., Wabash & Western 6	6
Union Pacade 60	60%
Western Union Telegraph 78%	78%

GENERAL HARDWARE.

While it cannot be said that there is any improvement in the demand for Hardware, it is evident on every hand that manufacturers are making early preparations for spring trade. Beside the revisions of lists and discounts noticed last week, and the changes which appear in this issue, we hear of several catalogues which are being revised, and which will be there seems to be a good deal of hopefulness, as it is generally believed that the country is over. in need of goods and in a good condition to Hardware in Pennsylvania, writing under date of 6th instant, says: "We think we see some improvement in orders by mail since New Year's, and think we are near the end of shrink-

The manufacturers of Table Cutlery held a of which was the classification of new goods for the coming season. At their previous meetwere left open These have now been classified, and the entire product of the manufacturers is subject to combination terms. We are made in prices. The following circular has been issued :

been issued:

To the Trade: The undersigned hereby give notice that they have made further changes in their prices and terms. Prices will be furnished to our respective customers in the usual way, on the receipt of a list of such numbers as they may have on hand, or may desire quotations for. We offer special inducements to dealers to confine their purchases to members of this association.

BEAVER FALLS CUTLERY CO,

BEAVER FALLS CUTLERY Co. LANDERS, FRARY & CLARK. JOHN RUSSELL CUTLERY CO. MERIDEN CUTLERY CO.

CHICAGO CUTLERY MFG. CO.

LAMSON & GOODNOW MFG. CO.

January 8, 1877.

D. Maydole & Co. have issued under date of 1st instant a revised price list for David May dole's Cast Steel Hammers, which we print be low. It will be observed from the following circular that a discount of 10 per cent. is the manufacturer's price for orders amounting to \$100 and over. These goods are quoted by the trade here at discount 15 per cent:

trade here at discount 15 per cent:

Norwich, N. Y., January 1, 1877.

Gentlemen,—We take pleasure in handing you herewith our new Price List, which is a considerable reduction on our former list, and which we trust may induce to increase your orders to us. We beg to call your special attention to the following terms, which will be strictly adherel to in all cases. From this date we shall sell exclusively for cash, and shall draw at sight for all bills not settled within thirty days from their date. Orders amounting to less than \$100 will be net cash at hist prices. On orders amounting to \$100, or over, a discount of 10 per cent. will be allowed, and goods will be delivered on board cars at our depot in Norwich, but in no case will freight be allowed. We shall make no charge for boxes, except when parties order less than twelve dozen, when they will be charged at cost. Orders will be executed in the order of receipt, and goods will always be inorder of receipt, and goods will always voiced at the prices ruling at the time of ship ment. Soliciting a continuance of your order we remain, Yours, truly, D. MAYDOLE & Co.

PRICE LIST OF D. MAYDOLE'S CAST STEEL HAM MERS. Weight

						per sing
			4.9-	71 TT	Per	Hamme
01.1	77.	4	Adz-	Eye Hammers.	doz.	lb. oz
Old	No.	1	New No	14	₿ 9.20	1-4
	0.6		64			
	60	3	44	2	7:50	
		8		3	6.20	7)
				e Bell-Face Hamm		
Old	No.	1). 11	10.00	
	6.6	13	6 44	1136	9.00	
	6.6	2	44	12	8.00	
	5.6	8	8.6	13	7.00	7
			Fa	rriers' Hammers.		
Old	No.	1	New No	o. 51 Adz-Eye Far-		
ri	er's				7:00	10
Old	No.	9	New No	. 52 Adz-Eye Far-		
	er's.				6.50	7
Pla	in, 5	5 .			4.50	7
				iners' Hammers.		
014	No	0.3		20 (Box)	8:00	1-8
Old	60	1	66	21		
	4.4	13	2 46	21%	6:00	
	6.5	2	8.6	22	5*00	
	6.6	3	2.5	23 (Brad)	4.20	
		0				
				Bell Face Hamm	ers.	
Old	No.	. 1	New No	0. 31	8:00	1-1
	8.6	13	£ 66	313/2	7.50	14
	6.6	8	0.9	32	6.75	
	66	3	6.6	33	4:50	
			Blackan	nithe' Hand Hamm		
Old	No.		New No		15.00	
	6.6	8	44	62		
	**	1		65 (Shld'r Pein).	15.00	
		C	arriage I	roners' Hand Han	amere	ð.
Old	No.	1	New No	0. 111	16:00	2-12
-	6.6	2	8.6	119	15.00	2-6
			Eng	ineers' Hammers.		
013	37-	4		. 91 Riveting Pein	10.00	
Old	No.		MGM MO	92 " Riveting Pein	12.00	2-4
	6.6	3	44		10.50	
	0.5	1	44	81 Ball	15:00	
	46	2	66	O.e.	13.00	
	**	8		00	11.00	1- 2
			Ri	veting Hammers.		
Old	No.	0	New No	40	8:00	1-8
	9.6	1	66	78	0 00	
	9-6	2		42	5.25	13
	6.6	3	6.6	43	4.00	
	66	4	66	44	3:50	4
		3	Machinia	ts' Chipping Ham	mers.	
Old	No.	0	New No	101	15:00	1-12
0.0	61	1	6.0	101	18:00	1- 6
	6.5	2	45	102	19:00	1- 2
	6.6	3	6.5	103		
		-	Machinia	te' Ball Pein Ham		
OLA	No.			0. 70 Hatti		
Oil	46	0	4404 24	70%		
	0.0	1	44	71		
	66	2	6.0			
	66	3	a 6	78	12.5	0 1-4
	64	4	60	74	13:0	
	44	5	66	75	0.5	0 1-1
	94	6	44	76	8:5	
	4.6	7	46	77	7.5	
-	7.0			77		
					ndles	
900 O	97 97	977	an on	nce or two mo	FO 0	e loss u

may vary an ounce or two, more or less, as the bars of steel will vary slightly in size. The Empire Horse Nail Co., of Penn Yan, N. Y., dissolved on the 6th instant.

The firm of J. Clark Wilson, & Co., consisting of J. Clark Wilson, W. Kumbel Wilson, Henry L. Butler, Jr., and Albert Ferguson was dissolved on the 30th ultimo, and on January 1st the following aunouncement was made, which was accidentally omitted in our issue of 4th instant:

The undersigned will transact a co business, as factors for the sale of American and Foreign Hardware, Tools, &c., at 81 Beek-man street, under the firm name of J. Clark

Wilson & Co.—New York, January 1, 1877. J. Clark Wilson, W. KUMBEL WILSON, ALBERT FERGUSON.

The Association of Nail Manufacturers of the Atlantic States held a meeting in this city today. It is not expected that any change will be made in price or terms, and at the close of business their action, if any, had not transpired. We continue to quote on a very dull market issued in a few days. Regarding the future 10d, to 60d., \$3 per keg not, with the usual discount of 10c. per keg, for lots of 100 kegs and

In their advertisement this week, the Russell pay for all its requirements. One of the oldest & Erwin Mfg. Co. present to the trade illusand most extensive manufacturers of Heavy trations and list prices of a new line of Locks which they are now ready to deliver. The Bolts of these goods are of iron, plated with brass, and present the same appearance as solid brass, while the price is very little more than for corresponding goods with Iron Bolts. This new line will be found very desir meeting on the 8th instant, the principal object able by retailers, and can be sold at a larger profit than ordinary goods. We believe that this is the first time that this result, which has ing the price of Carvers and some other goods often been attempted, has been successfully accomplished.

The Humason & Beckley Manufacturing Co., New Britain, Coun., and No. 100 Chambers informed that no material change has been street, have issued a revised and enlarged edition of their catalogue. The book contains 88 pages, which are profusely illustrated. They present a large line of Cork Screws, Nut Cracks Screw Drivers, Chopping Knives and other goods suited to the Hardware and House Furnishing trades, beside a handsome assortment of Pen and Pocket Knives, which are clearly represented by excellent engravings. A more detailed enumeration of the contents of their catalogue will be found in their revised discount sheet, which is printed below:

DISCOUNT SHEET OF THE HUMASON & BECKLEY

MANUFACTURING GO.

JANUARY 1, 1877.

	JANUARY 1, 1877.
1 a	Die, per cent,
	Bolts
5-	Cupboard or Closet Latches, Patented40
e-9	Hand Rail Screws40&5
or	Cork Screws 3334 Nut Crackers—for Table 3834
g	Nut Dicks 931
e	Malleshie Hooks and Eves Oval 60&10
0	Nut Picks 35% Malleable Hooks and Eyes, Oval 50&10 Pocket or Skaters' Gimlets 40 Pilers 334 340 Pilers 334 Annual Pilers 33
e	Pliers
	Cotton Hooks
	Pruning10
	Screw Drivers80
g.	Marking Awis
h	Por Hooks 98
r	Box Hooks 25 Box Scrapers, 2 Handles 20
0	Saw Sets, Nash's Patent
11	Hoof Cleaners 10
OP	Belt Punches. 20 Saddler's Claw Tools. 20
g	Saddler's Claw Tools20
1-	Mincing Knives
11	Kitchen "
ir	Classics, McGill 8
1)	Kitchen ' 50&10 Can Openers, McGill's 40 Cleavers 44 Cleavers 24 Knife Sharpeners, Nash's Patent 26
t-	Ice Picks 334
t.	Ice Picks .33½ Carpet Claws 20&10 Butter and Cheese Tryers .25
n	Butter and Cheese Tryers
	Curling Irons
0	Wrought Hooks and Staples, Plain and Japanned,
e	Hand Forged
er	Wronght Staples, Plain and Japanned, Hand
е	Butter and Cheese Tryers 25 Curling Irons 45 Wrought Hooks and Staples, Plain and Japanned, Hand Forged 75 Wrought Staples, Plain and Japanned, Hand Forged 75 Wrought Hasps and Staples, Plain and Japanned, Hand Forged 75 Wrought Rings and Staples, Japanned, Hand Forged 77 Rings Japanned 77
e	Hand Forged
1-	Wrought Rings and Staples, Japanned, Hand
D-	Forged
d,	Rings, Japanned
	Wrought Awning Hooks, Hand Forged
	Wrought Meat Hooks, Tinned, Hand Forged 75
4-	Cattle Leaders 60 Bow Pins 60
	Bull Rings
tn	Rull Punches 98
le	Tobacco Needles
r.	Bull Punches 20 Tobacco Needles 33½ Hammers, Soid Cast Steel 33½
	Nail Sets
•	Nail Drawers or Box Openers, Solid Cast Steel 331
	Nail Sets
	Key Rings
16	Combination Acme Knives, Arentz's Patent 25
	Toning Forks
	Triangles 16
	Triangles 10 Pen and Pocket Cutlery, "H. & B." 22 Erasers 24 Towns cash within 30 days.
	Erasers 20
	Women coah within 20 days

Terms, cash within 30 days. The Middleboro' Shovel Co, have issued the following circufar, showing a change in the price of their goods from discount 25 per cent. to discount 30 per cent.:

to discount 30 per cent.:

Boston, Jan. 1, 1877.

Gentlemen: On and after this date we shall allow on all of our goods a discount of 30 per cent. from list prices.

We will also allow an extra discount of 6 per cent. to all parties whose net purchases from us exceed \$500 in six months.

Our terms are net cash, payable in Boston or New York funds, we teserving the right to draw at sight, with exchange, for all bills not paid at maturity. All goods at risk of purchaser after shipment from the factory. All orders will be filled at the prices ruling at the date of shipment. We are now making Welded Solid Cast Steel Smooth Back Shovels and Spades, equal to any in the market. Very truly yours, THE MIDDLEBORO SHOVEL CO.

The' Ornamental Wood Co., Bridgeport, they illustrate their assortment of ornamented and plain Wood Door Knobs, Escutcheons, to \$15 and \$16 per dozen.

The Walworth Mfg. Co., Boston, Mass, have

The Association of Manufacturers of Wrought Iron Pipe, at their meeting on the 28th December last, decided to make the discount from list price 50 per cent., also 2 per cent. from net amount of invoice for cash on

receipt of invoice.

This discount is offered by them to all pur chasers, irrespective of the quantity they may buy, or the kind of trade they may be en

gaged in.

We assure our customers that we shall sell
only the best quality of Pipe, and our prices
and discounts are, and shall be, fully as low as
the manufacturers, whether there is any profit
in haudling the pipe or not.

H. S. Mauning & Co., No. 111 Liberty street have issued a revised list for Set, Cap and Machine Screws. It will be seen that they have adopted the American Screw Co.'s list for Machine Screws. Their discounts will be the same as quoted by the American Screw Co.

A. G. Hatry, Pittsburgh, Pa., has issued the following circular:

A as a basis. Plate Iron, 1/4, 3-16 and 1/4 inch thick, 29-10c.

Tool Steel, 12c. per lb. Window Glass, 50 per cent. discount from

Window Grace,
list.
Borax, 11c. per lb.
Above prices are 60 days, or 2 per cent. off
for cash.
I would also call the attention of the trade to
the fact that all the nails I sell are assorted by I would also call the attention of the trade to the fact that all the nails I sell are assorted by Coyne's Patent Automatic Nail Picker, which is being rapidly adopted by the nail manufacturers, and all nail factories having these machines, give to their customers an article which is free from dust, clivers, headless, or imperfect nails, and every nail in the kegs can be used, and the consumer gains at least three pounds in each keg, which he has heretofore got in worthless scrap and dirt. Always ask for Coyne's Machine Picked Nails.

Special prices given on application on large

Special prices given on application on large lots of any article quoted.
Soliciting a share of your patronage, and wishing you the compliments of the season, I remain, yours truly,

A. G. HATRY.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, Jan. 10, 1877. Scotch Pig .- Since last report the market has been depressed, but a better feeling is now prevalent, and prices are steady. The followng are makers' quotations :

Coltness No. 1.
Glengarnock No. 1.
Eglinten No. 1. Manufactured Iron and Rails remain as

IRON.

American Pig.-We hear in some quarters of an improved demand and a better feeling, while others consider the outlook worse than ever. Meantime, it is certain that prices are without change, and are fully as firm as they have been. The number of furnaces in blast continues as before, and as the market price seems to offer but little inducement to increase the production, it is not likely that many more furnaces will be put in blast. We continue our quotations as follows: Foundry, No. 1, \$21; Foundry, No. 2, \$19.50 @ \$20; Gray Forge, \$19 @ \$20.

Scotch Pig.-Scotch Iron is selling in a retail way. During a week back the arrivals have

inquiry for both Iron and Steel Rails. We note the sale of 1000 tons Iron, to be delivered at Stonington on private terms; also 1500 tons 40 81/4c., gold, for "Mosselmann," and 81/4c. @ lb. Steel, delivered at Amboy, at \$51. We quote Steel, \$50; and Iron, \$35.50 @ \$37.

Old Rails.-The market continues without change. We quote, \$20.

Scrap .- There have been sales estimated to amount to 1000 tons on private terms. We quote \$25.50 @ \$36.50 as the market price.

METALS.

Copper.-Sales for the week have been re-Most holders are quite firm, but manufacturers of Australian stood on January 1, 1876, 8329 Now, while the great Coal and raffway compatons, against 4355 on December 15. One of the Superior Copper from America to Europe there is nothing done. This was one of the sumption of fine sorts of Copper Las made to form a new combination the basis of per, the difference between the value of Chili are more united than before, and the object is There is but a slight demand for manufactures, Bolts and Braziers; New Yellow Metal Sheathing, 181/c. @ 19c.; and Yellow Metal Bolts, 26c. @ 28c., net cash.

Tin.-There is but a moderate inquiry at London, where (as per cable) it is quoted to-Pittsburgh, Jan. 6, 1877.
In issuing my first circular for 1877 I would say that the merchants and consumers need say that the merchants are say that the me

have no fear to lay in their spring stock of any articles which I quote, as the figures are below the cost of production, and must soon take a change.

Prices may be fairly quoted about as follows: I fron, assorted order, 19-10 rates.

Nails, assorted orders, 2°75 rates for 10d.
Sheet Iron, light gauges, 3 3-10 rates for No. 24 as a basis. ome somewhat demoralized, so much so that in order to effect a large sale of Straits a fraction below 17c., gold, would probably have to be accepted. We quote nominally Straits, 17c. @ 171/c., gold; English Refined, 17%c.; do. Common, 16%c. @ 17c.; and Banca, 19c. @ 19%c., all gold, large lines. Some interesting statistics have just reached us from the Island of Banca. According to the official report there was a stock in the nine provinces of the Island on July 1, 1876, of 48,871 piculs, to which there were added during the ensuing three months 3008 piculs, while the shipments simultaneously effected thence to Java amounted to 20,050 piculs, leaving a stock on hand, Oct. 1, 1876, of 31,329 picuis. Tin Plates-Are quite steady in England, as per cable, while here we have a very quiet state of affairs, little transpiring beyond a small jobbing business. We quote, gold, per box, ordinary brands, large lots, as follows: Charcoal Bright, \$6.75 @ \$7; do. Ternes, \$6 @ \$.121/4; Coke Tin, \$6, and do. Ternes, \$5.621/4. One of the London firms, under date 20th ult., expresses itself as follows: The qualities of Pig Iron used in the manufacture of Tin Plates are rather dearer than they were three months ago, which correspondingly increases cost, and from the firmness of the market, especially for hematites for next year's delivery, we do not think makers can look for lower prices than those ruling at present."

Lead .- Thirty tons Domestic sold at 6:15c., currency. This is all we have to report in the way of sales beside some lots of Soft Missouri sold here, we understand, at 6.85c., currency. St. Louis quotes 5%c., currency; the freight is 50c. There are now affoat for New York by various conveyances from the Pacific, 2153 tons of Common Domestic. Foreign we nominally quote 6%c. @ 6%c., gold. Mail accounts are to hand from London to the 23d ult., according to which the market had slightly receded, business transpiring at reduced prices both in English and Spanish. Of the latter there remained sellers at £21, 1 Manufactured remains in restricted demand at 8%c. for Bar, 9c. for Pipe and 91/4c. for Sheet, less the usual discount to the trade.

Spelter and Zinc .- Both Domestic and Foreign Spelter remain as stagnant and incapable of life as ever; we have, therefore, to been about 250 tons, of which part has been reduce our nominal quot tion to 61/2c. @ 61/4c., put in yard for want of a customer. We note currency, for the former, while we leave the the sale of 75 tons Glengarnock at \$26.75; 50 latter unchanged-6%c. @ 7c., gold. London tons Cernbroe, at \$26; and 50 tons Eglinton at mail accounts are to hand to the 23d ultimo, to \$25.50. We quote, Glengarnock, \$27@ \$27.50; the following effect: "Transactions in this Eglinton, \$25.50 @ \$26, and Carnbroe, \$26 @ metal have been limited, and lower prices accepted. The price of 'Vieille Montagne' Sheet Rails.-There continues to be considerable | Zinc has seen reduced at Paris, and probably the decline in our markets is partly from this cause." Sheet Zinc remains quiet at 81/4c. @ 8%c., currency, Domestic.

Antimony is firmly held at 131/2c., gold, but trade in this metal develops slowly, like the rest. London is strong, but unaltered.

COAL. The Coal trade at present is extremely dull,

partly owing to the small demand, and partly because of the severe weather, which still continues to be a great obstacle. Prices remain stricted to 200,000 pounds Lake Superior at unchanged, and we make no alterations in our 19%c. @ 19%c., the market being very quiet. quotations. The only topic of interest discussed by the trade is the effort to establish a are not yet in the market. Baltimore we new combination, for the purpose of controlnominally quote 19%c. No change is reported ling and restricting the amount of coal mined by cable from London. By mail we are in re- and sent to market. The companies are satisceipt of advices from London to the 23d ult. fied that it is impossible by any combination or The import of Copper into the United King- agreement for them to regulate the prices at dom during the first eleven months of 1876 was which Coal is sold, but they hope to be able to 70,397 tons, against 70,549 and 64,550 in 1875 control the production to such an extent that and 1874, while there were exported Wrought, prices will be forced up to the point to which Unwrought and Yellow Metal, 48,491 tons, they wish to have them. To do this is a very against 47,219 and 56,134. On January 1, 1876, difficult matter, since upon two of the roads the visible supply of Chill Copper was 26,363 there are a great number of individual opertons, while on December 15 last it had in- ators, and, as the roads are common carriers, creased to 35,736 tons. On the other hand, that they are forced to furnish cars when called for. chaser after shipment from the factory. All tons, against 30.50 in December 15. Orders will be filled at the prices ruling at the date of shipment. We are now making Welded these statistical items: "The decrease in Austroads whose tonnage is furnished by inditralian is all the more favorable to fine sorts of vidual operators; there are too many per-Copper, as the total shipments of Lake sons responsible, and the consequence is that from January 1 to December 6 have been great causes of contention in the combinations Conn., have issued a new catalogue, in which 6360 tons. It is very clear that the con previous to the last. In the effort now being been very large, and no doubt specially agreement is much stronger. The ladividual Shutter Knobs, Drawer Pulls, &c. The list for cartridge purposes. While the general operators along the line of the Lehigh Valley price of Wood Door Knobs has been reduced statistics are unfavorable to the price of Cop- and Central of New Jersey, it would seem, Bars and Wallaroo may not only remain as now to obtain all their signatures to an agreeissued a circular to dealers and consumers of Pipe, under date of 6th instant, in which they larger." Mr. A. Harnickell, of this city, they shall not exceed the tonnage assigned estimates the consumption of Copper in this to them. Should a new combination be country in 1876, including cartridges, at formed such an agreement would place 33,000,000 pounds. But for the enormous it upon a much stronger basis than any quantity of cartridges absorbed in both hemione previously made. This, it is hoped, spheres last year, Copper would have been will be a sufficient inducement to bring in a sore plight, the industrial demand having in the other companies. But, on the other been comparatively slack everywhere. This hand, we have the fact that at least two of the year we hope the latter will be active with us, great companies are in such a financial condibut ere it can become so, the political question tion that they can do business for a much will have to crase weighing heavily on general smaller margin than the others, being satisfied trade, especially in the Southern States, whose to cover their running expenses. For them commercial recuperation is of a more pressing there will be little inducement to enter into a importance to our common interests than many combination from which they can gain absopeople at the North seem inclined to concede. lutely nothing, and by which their earnings may be seriously diminished. which we quote 31c. for Sheathing, and 32c. for combination is or is not formed, there seems to be very little hope for the Coal mining and carrying companies unless tore, gu markets can be found. By careful attention to the foreign markets we believe much Anthracite might be exported. In truth, Anthracite Coal is a luxuday £75, 10/ for Straits, while at Singapore the ry, and when its value and convenience are

This will be a matter of time, but it will doubtless come. Our quotations will be found on page 24

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending January 9, 1877: . Hambury. Quan. Value.

		Hdw., cs	- 3	\$251
Quan. Vi	ilue.	Nails, kegs	30	98
Hardware, cs. 64 \$	1,335			
Pumps. pkgs. 3		Cuba	*	
Ag. tmp., pkgs 30		Cutlery, bxs	15	138
Copper, pkgs. 54 13	5,000	Car mtls, cs	3	600
			162	1,812
Bremen.		Tel. mtls., bxs	47	2,987
Hardware, ce 7	510	Wire, coils	75	1,074
Pumps, pkgs 3	400		198	695
	1,780	fldw., pkgs,	199	2,883
Machinery, cs. 6	186	Ag, imp., pkgs	63	1,611
machinery, co.	100	Mach'y, pkgs.	11	448
Dutch West Indi	es.	named \$1 frame.		
printer in case and		Cisplatine R	epi	iblic.
Nails, kegs 96	90		-	
London.		Ag, imp		5,650
London.		Hdw., pkgs		684
Hardware, cs., 227	1,700	Mach'y, pkgs.	3	1,100
		Mexico	0.	
Liverpool.		-		
Cutlery, ca 5	575		110	7,953
	1,240	Hdw., cs	85	2,229
	2,113	Cutlery, cs	5	493
Wringers, cs. 9	320	Nails, kegs	61	265
Rifle, case 1	259	Mf. iron, pkgs.	7	199
Thine, care	400	Cartridges, cs.	- 6	400
Glasgow.		Revolvers, ca	2	6,078
Hardware, ca., 2	307			
	1,040	Argentine R	epv	totte.
Machinery, cs. 20 1	500	Hdw., pkgs	37	615
fron rollers 41	200	Ag. imp., pkgs	672	1,595
Canada.		Iron, casks	20	330
		II yu, Caeke	40	300
Tin plate, bxs. 50	228	Chill		
British Guiano	R.	Ag. imp., pkgs	88	4,152
Hdw., ca 19	275	Mach'y., pkgs.	563	10,640
British Austral	1-		50	508
British Austral	ter.	Nails, bxs Pumps, pkgs	2	422
Ag. imp., pkgs 51 5	009.4		18	790
Hdw., cs 95	0.308	Tinware, cs	150	2,866
			3	247
British Hondur	RB.	Iron, cs Nails, kegs	48	170
Machinery, cs. 2	125	and and		

IMFORTS

Of Hardware, Iron, steel and Metals into the Port of New York, for the week ending January 9, 1877 :

Order. Manganese ore, bbls.

Hardware.

hans Jos.

Beckhaus Jos.	Manganese ore, bbls.,
Ironware, cs., 3	30
Boker Hermann & Co.	Boxes, 100
Mdse. pkgs., 16	Scrap, tons, 45; cast,
Fuller Bros.	tons, 15
	Without Bil's of Lading.
Mdse., pkgs., 1	Sheet, bdls., 162
Law & Garlichs,	Succe, buts., 104
Mdse. pkgs., 1	1
McCoy & Co.	Steel.
Mdse., pkgs., 5	Dictor.
Moore's, J. P., Sons,	Brown William,
Mdse, pkgs., 2	Bundlee, 196
	Cases, 7
Merciants' Dispatch Co.	
Arms, cs., 9	Proseer Thos. & Sons,
Nichols & Lefevre,	Mdse. pkgs., 28
Arms, cs., 1	Woodford W. O.
Remington E. & Sons.	Cases, 15
Gan barrels, ce., 8	Bundles, 15
Cahoverling & Dair	Order.
Schoverling & Daly,	
Mdse., pkgs., 3	Scrap spring, lots, 1
Wiebesch & Hilger Hdw.	Cases, 23
Co.	Bundles, 947
Hdw., cutlery & caps,	Rods, bdls., 21
pkgs., 25	Casks, 15
Order.	Curant 10
Chains, cks., 34	Metals.
Casks, 5	
Casks, 5 Nails, cks., 1	Byrne Jos. & Co.
Casks, 5	Byrne Jos. & Co. Tin plates, bxs., 531
Casks, 5 Nails, cks., 1 Packages, 12	Byrne Jos. & Co. Tin plates, bxs., 531
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading,	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co.
Casks, 5 Nails, cks., 1 Packages, 12	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son,
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading,	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1
Casks, 5 Nails, cks., 1 Packsges, 12 Without Bills of Lading, Wire rope, coils, 1 Iron.	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T.	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1;
Casks, 5 Nails, cks., 1 Facksges, 12 Without Blits of Lading, Wire rope, coils, 1 Iron. Hopkins E. T. Tubes, 526	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1;
Casks, 5 Nails, cks., 1 Facksges, 12 Without Blits of Lading, Wire rope, coils, 1 Iron. Hopkins E. T. Tubes, 526	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins E. T. Tubes, 526 Henderson Bros.	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4
Casks, 5 Nails, cks., 1 Fackages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 535 Hendersen Bros. Fig. tons, 100	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co.
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins E. T. Tubes, 525 Hendersen Bros. Pig. tons, 100 Mdse, pkgs., 28	Byrne Jos. & Co. Tin plates, bxs., 591 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 372
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 525 Hendersen Bros. Fig. tons, 100 Mdsc. pkgs., 28 Lang W. Haliey,	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 372 Pitelps, Dodge & Co.
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 525 Hendersen Bros. Pig. tons, 100 Mdse, pkgs., 28 Lang W. Hailey, Piates, 1	Byrne Jos. & Co. Tin plates, bxs., 591 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 372 Pielps, Dodge & Co. Black taggers, bxs.,
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 526 Hendersen Bros. Fig. tons, 100 Mdse. pkgs., 28 Lang W. Haliey, Plates, 1 Bandles, 40	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 272 Pielps, Dodge & Co. Black taggers, bxs., 800
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins E. T. Tubes, 525 Hendersen Bros. Pig. tons, 100 Mdse, pkgs., 28 Lang W. Hailey, Piates, 1	Byrne Jos. & Co. Tin plates, bxs., 591 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 272 Pielps, Dodge & Co. Black taggers, bxs., 300 Scheider Jos. & Co.
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 526 Hendersen Bros. Fig. tons, 100 Mdse. pkgs., 28 Lang W. Haliey, Plates, 1 Bandles, 40	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 372 Pielps, Dodge & Co. Black taggers, bxs., School Scheider Jos. & Co. Fin plates, bxs., 136
Casks, 5 Nails, cks., 1 Packsges, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 526 Henderson Broa. Pig. tons, 100 Mdse. pkgs., 28 Lang W. Balley, Plates, 1 Bandles, 40 McCoy & Co. Bundles, 22	Byrne Jos. & Co. Tin plates, bxs., 591 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 272 Pielps, Dodge & Co. Black taggers, bxs., 300 Scheider Jos. & Co.
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 385 Hendersen Bros. Fig. tons, 100 Mdse. pkgs., 28 Lang W. Hailey, Plates, 1 Bandles, 40 MCOy & Co. Bundles, 22 Plates, 419	Byrne Jos. & Co. Tin plates, bxs., 591 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 272 Pielps, Dodge & Co. Black taggers, bxs., 300 Scheider Jos. & Co. Fin plates, bxs., 136 Grder.
Casks, 5 Nails, cks., 1 Packsges, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 526 Henderson Broa. Pig, tons, 100 Mdse. pkgs., 28 Lang W. Halley, Plates, 1 Bandles, 40 McCoy & Co. Bundles, 22 Plates, 419 Marvel W. D.	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 372 Pilelps, Dodge & Co. Black taggers, bxs., 390 Scheider Jos. & Co. I'm plates, bxs., 136 Order. Tin plates, bxs., 136
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 385 Hendersen Bros. Fig. tons, 100 Mdse. pkgs., 28 Lang W. Hailey, Plates, 1 Bandles, 40 MCOy & Co. Bundles, 22 Plates, 419 Marvel W. D. Ore, tons, 260	Byrne Jos. & Co. Tin plates, bxs., 591 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Grap copper, bbls., 1; Cks., 1 Cks., 4 Naylor & Co. Tin plates, bxs., 272 Pielps, Dodge & Co. Black taggers, bxs., 300 Scheider Jos. & Co. Tin plates, bxs., 136 der. Tin plates, bxs., 9721 Rolled zinc, cks., 90
Casks, 5 Nails, cks., 1 Packsges, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 526 Henderson Broa. Pig, tons, 100 Mdse, pkgs., 28 Lang W. Halley, Plates, 1 Bandles, 40 McCoy & Co. Bundles, 22 Plates, 419 Marvel W. D. Ore, tons, 260 Korsbania, Disnatch Co.	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 372 Pielps, Dodge & Co. Black taggers, bxs., 390 Scheider Jos. & Co. I'm plates, bxs., 136 order. Tin plates, bxs., 136 Tin plates, bxs., 9721 Rolled zinc, cks., 90 Tin ingote, 318
Gasks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 385 Hendersen Bros. Fig. tons, 100 Mdse. pkgs., 28 Lang W. Hailey, Plates, 1 Bandles, 40 McOoy & Co. Bundles, 22 Plates, 419 Marvel W. D. Ore, tons, 260 Forhanis Dispatch Co. Tubes, 500	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap, bone, 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 272 Pielps, Dodge & Co. Black taggers, bxs., 300 Scheider Jos. & Co. I'in plates, bxs., 136 order. Tin plates, bxs., 9721 Rolled zinc, cks., 90 Tin ingote, 318 Without Bills of Lading,
Casks, 5 Nails, cks., 1 Packages, 12 Without Bills of Lading, Wire rope, coils, 1 Iron. Hopkins B. T. Tubes, 385 Hendersen Bros. Fig. tons, 100 Mdse. pkgs., 28 Lang W. Hailey, Plates, 1 Bandles, 40 MCOy & Co. Bundles, 22 Plates, 419 Marvel W. D. Ore, tons, 260	Byrne Jos. & Co. Tin plates, bxs., 531 Cort N. L. & Co. Tin plates, bxs., 848 Montell & Son, Scrap lead, pcs., 1 Brass, bbls., 2 Scrap copper, bbls., 1; cks., 1 Scrap, brass, cks., 4 Naylor & Co. Tin plates, bxs., 372 Pielps, Dodge & Co. Black taggers, bxs., 390 Scheider Jos. & Co. I'm plates, bxs., 136 order. Tin plates, bxs., 136 Tin plates, bxs., 9721 Rolled zinc, cks., 90 Tin ingote, 318

OLD METALS, PAPER STOCK, &c.

We have nothing definite to report in the condition of the market for Old Metals, Rags, Paper Stock and other junk materials during the period that has elapsed since the date of last. Old Metals still continue dull, and there is little demand from consumers for any description of stocks. Rags and Paper Stock sale is effected, but this is an exception and not the rule, as buyers are holding off, and cannot be induced to purchase any considerable quantity. We quote the following as the current purchasing rat s:

Current purchasing rat s:

Old Metals.—Copper, i6c. per lb.; Yellow Metal, 10c.; Brass, bc.; Composition, heavy, 12c. @ 13c.: Lead, solid, 4½c.; Tes Lead, 4c.; Zinc, 4c.; Pewter, No. 1, 13c.; do., No. 2, 8c.; Spetter, 5&c., Wrought fron, \$21 per ton; Light do., \$10 per ton; Stove Plate, \$9 per ton; Machinery, do., \$12 per ton; Burnt Iron, \$4 per ton.

Rags, &c.—Canvas, Linen, 4½c. @ 5½c.; do. Cotton, No. 1, 5½c.; No. 2, 2½c.; White, No. 1, 5c.; No. 2, 4c.; Colored, do., 2c.; Mixed, W.olen, 2c. @ 3c.; Soft, do., 5½c.; Gunny Bagging, 1½c.; Jute Butts, 1½c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3½c.; Newspaper Stock, 2½c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakur Jinn., No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1½c.; Grass Rope, 3c.

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St., i PHILADELPHIA, Jan. 9, 1877.

The business prospects are not essentially changed since our last, and there is about the same uncertainty as before. The weather has been unusually severe, the streets blockaded of the Western cities. This indicates that figure, our manufacturers say, is consider-the railways are about ren.wing their ably below cost of production here, and misfortune is, that they are not only impoverished in equipments, but by their system of have a further decline in Bars. In the mean a position to enter the market as a cash buyer

Reading Railroad Company, held yesterday, it 708 less than the charges against it for the same period. Some of the less prominent local factory condition, the effect of which is felt severely in many branches of business in this Muck Bars, \$37 to \$39. vicinity. The deficiency in the Reading is attributed entirely to the operations of the Reading Coal and Iron Company, and not to the \$60 for 11/4 and 1/8 to 1/4. transportation business proper. From the annual statement we learn that nearly \$50,000,000 have been raised during the past 10 years for the use of the Reading Coal and Iron Company, and to this branch must be attributed the present embarrassment of the company.

Pig Iron-Continues in the same unsettled to be very disappointing, although we find, upon close inquiry, that about 4000 tons have changed hands since the first of the year. There is nothing like activity, however, and with offerings in excess of the demand, prices are unsettled and weak. We cannot hear of any sales of No. 1 Foundry for less than \$21, but Gray Forge has been sold at \$18 here, and if offers were made for round lots of Foundry Irons, concessions would doubtless be made sooner than lose a customer. In fact, at the present time buyers have the market pretty much in their own hands, and sellers seem disposed to accept any reasonable offer from firstclass buyers. We make no change in quotations, but the judications are that a decline will be established within the next few days. We note from Mr. Swank's statistics, which will no doubt be scrutinized with deep interest, that the reduction in stocks is only about 100,000 tous, while the decrease in by %, 81/c. production is over 200,000 tons, as compared with 1875, and over 800,000 as compared with 1874. From this it is clear, that unless there is a very important increase in consumption, the them. We refer our readers to Mr. Swank's detailed statement, which will be found on another page, a perusal of which will throw more light on the present condition of the iron trade, than anything we can say. There are rumors of additional furnaces going into blast, and it is likely that several will do so at an early date. In the meantime, the Plymouth, at Conshohocken, will blow in one this week, and Seyfert, McManus & Co., will also put one in blast in a few days. We cannot learn anything definite in regard to others, but in our next we will probably be able to report a further addition to the number. What the result will be it is difficult to predict, in the meantime there seems to be nothing to warrant an increase of production, but it is safe to say it will have the effect of reducing prices. If lower prices enables our iron working establishments to get to work, it may eventually prove a real benefit to the trade at large, but we cannot bear of any business offering likely to absorb any important amount of iron. From present indications it seems as though we should have a lower range 87.37%; Coke, Leaded, 14x20, \$6.50 to \$6.75 of prices without any increase in consumption. We quote: No. 1 Foundry, \$21; No. 2, do., very weak and unsettled feeling throughout.

the past few days, and prices are nominal. In reney. case of pressure to sell, a considerable reduction would have to be accepted to secure a buyer while under a necessity to purchase, the following rates representing latest sales would have to be paid, price according to quality. Charcoal Scrap Blooms, \$45 to \$47; Charcoal Ore Blooms, \$40 to \$42; Charcoal Billets of superior quality, \$55 to \$62; and Bars for converting into steel, made of best Champlain Iron, \$72 and 1 lb. bars, 8%c., less 10 per cent. to the to \$75. Strictly Cold-blast Charcoa! Blooms, trade hammered, are quoted \$60 to \$62, and Billets, \$68 to \$70.

Ores .- Business continues quiet, sales are on the basis of the following quotations, although 161/2c.; Light Tinned Copper, 14c.; Copthe feeling is rather weak: New Jersey Magnet-les-Hacklebarney Bessemer Select (Broken), \$3, 13c.; Light Red Brass, 12½c.; Heavy ics-Hacklebarney Bessemer Select (Broken), \$3, 13c.; Light Red Brass, 12%c.; Heav cash, f. o. b.; Red (washed), for Foundry Metal, Yellow Brass, 11c.; Light Yellow Brass, 10c. \$3.75 to \$4, f. o. b. Port Oram; Magnetic Lan- Heavy Clean Pipe Lead, 51/c.; Junk Lead caster Ore, suitable for Anthracite or Bessemer purposes, \$3 per ton, f. o. b. Baumgardner's Heavy Paper, 5c.; New Zinc Clippings, 41/4c. to Station, Pa. Virginia, and Lake Champlain 41/4c.; Old Sheet Zinc, 4c.; Yellow Brass Turn-Ores, are entirely nominal, and no recent business is reported.

Manufactured Iron .- Bar Iron seems to be duller than ever, and there may be said to with snow, and the river all but closed with be absolutely no demand. The mills are all ice. It would be impossible to move any quan- making a show of running, but they are emtity of goods in the present condition of af- ployed on Skelp, and do not average one day a fairs, either by land or water, and the snow and week on Bars, and at that rate are accumulating ice seem as though they had come to stay. We stock. The stores appear to compete successare sorry to say, however, that there is no great fully with the mills as regards price, and in demand for transportation, and general busi- profits, too, if all we hear is true. The local ness is about as dull as it ever has been. Still, trade say it is impossible for them to make firstbaving the strongest confidence in the future.

We cannot learn of any new business of special retty full time, and with cheaper labor and late actual wants, and while prices are weak, Missouri Georgia.

Alabama.

Missouri Georgia.

Alabama.

To meager, confined entirely to supplying immediate actual wants, and while prices are weak, light Cast distribution.

importance. There is a fair activity in some of fuel probably have some little advantage in first there has been no change during the the fron shipbuilding yards, and prospects of others joining in toward spring. A contract for 2000—probably 3000—freight cars for the Pennsylvania Railway Company is about to be given out, and we understand a similar order chases at 1.80c., with freight at 16c., say, 2c. in the first shipbuilding yards, and prospects of cost, and that after selling a portion West at a week under review. Rumors are current that an effort is to be made to "corner" Jan. 6, write us as follows: Pio Iaon.—River our market; that some parties with ample means contemplate buying all the Pig Iron there is to be had, either here or at points have been some improvement in the amount of the case. the iron shipbuilding yards, and prospects of cost, and that after selling a portion West at a week under review. Rumors are current for the Lake Shore Road will be placed in one store for good brands of Merchant Iron. This tributary, and once they get control of the rolling stock, and we are also informed that they are willing to let the trade pass ent is unable at present to state. Bituminous there is more doing in bridge building, with them on these terms. A reduction in prospects in other directions of such additions wages has been accepted at nearly all the as the finances of the roads will permit. The mills, and if, as seems probable, a further reduction in Pig Iron is made, we may doing business the last 12 months they have time, there is no demand worth naming; it is impoverished themselves financially, and it is a not the price that is the obstacle, but there rare thing now to find any railway company in seems to be no demand for Iron, and lowering prices does not seem to help matters in the least. In Sheet Iron there is absolutely noth-At a meeting of the stockholders of the age of the stockholders of the long doing. Skelp is about the only thing that Reading Railroad Company, held yesterday, it keeps the mills running, and prices are very was shown that the gross earnings of the road low. There is a little business doing !n Plate for 1876, amounting to \$12,227,511, were \$1,355,- Iron, and inquiries would seem to indicate the continuance of a moderate degree of activity. We quote Bar Iron 1 90c. to 2c. for ordinary roads make a fair showing, but there is no brands, and 2.20c, to 2.25c. for Best Refined doubt the leading roads are in a very unsatis- Tank Iron, 2%c. to 3c. and upward, according to quantity and quality; Skelp, 21/c. to 21/c.

> Horseshoe Iron .- The demand is moderate, and prices without change, say, \$67 50 to

Steel Rails .- There has been no busines of importance since our last, and the general position is unchanged. Buyers are more than usually scarce, and low prices do not appear to attract their attention. Some large transact tions bave been pending, but we cannot learn of any business being consummated. Lots of condition as last reported. The demand is said a few hundred tons at a time are sold at about our quotations, and one lot of 1400 tons, 40 lb. Rails, is reported sold at \$51 at Perth Amboy We quote \$50 at mills as the nominal rate, with a disposition to make concessions to buyers for prompt delivery.

Iron Rails .- There is no change to note since our last; business is as dull as ever, and nothing to warrant anticipations of any immediate change. Sales are made occasionally of a few hundred ton lots at our quotations, but the mills are generally very quiet. We quote as before, with sales at prices according to quality, the last reported being 400 tons extra quality, at \$38 at mills. We quote ordinary Rulls (on a cash basis), \$34.50 to \$36, and standard brands, \$37 to \$38.50.

Spikes .- There is very little doing, and prices are without change. We quote: Railway Spikes, 2.25c. to 2.50c., and Mining Spikes, 4 to 41/2 by 1/2, 23/4c.; 4 to 41/2 by 7-16, 3c.; 31/2 to 4

Old Rails.-There is no demand of any importance, and ordinary lots to secure a buyer would have to be sold at our inside quotation. We hear of \$21.50 being offered and refused for furnaces have rather a poor prospect before a choice lot, but the quality was very exceptional. We quote \$20 to \$22 as a fair average of the market, the price being determined by quality.

> Scrap Iron .- The market remains as last quoted; demand rather light, as are the offer ings also. Choice lots bring full prices, but anything inferior is marked down rather sharply. For good average qualities we quote \$15 to \$17.; Wrought \$24 to \$26.

Nails .- Business continues dull, but there no change in prices-ssy, \$2.90 to the trade, and \$3.15 to consumers.

Tin Plates .- There is a fair business doing onsidering the dull season, and prospects indicate a good spring trade, The decline in gold counteracts to some extent the advanced quotations in England, but prices are steady. We quote in U. S. currency as follows: I C 10x14, \$8 to \$8.25; I X, 10x14, \$10.25 to \$10.50 Best Charcoal Leaded, 28x20, \$15.50 to \$17; other good brands, \$14.25 to \$14.75; good fair, \$13.50 to \$14.50; Bright Tin for Cans, &c. \$6.50 to \$7.25; good Bright Tin, do. \$7 to

Lead .- There is no change to report, and are duli and declining. An occasional large \$19 to \$19.50; Gray Forge, \$18 to \$19, with a effected. The feeling is a trifle stronger, howgold. Manufactured is steady. We quote: Bar 8%c.; Pipe, 9c.; and Sheet, 91/c., less 10 per

Shot-Remains quiet at the following quota tions: Drop Shot, 25 lb. bags, 9%c.; do., 5 lb bags, 10%e.; Buckshot, 25 lb. bags, 10%e. do., 5 lb. bags, 11%e.; Conteal Balls, 25 lb bags, 10c. per lb., net; Bar Lead, 5 oz., 3/ lb.

Old Metals.-The demand is very light, and offerings in excess of requirements We quote: Heavy Old Copper, 16c. to 5c.; Tea Lead, Light Paper, 51/2c.; Tea Lead, ings, 8c. to 9c.; Red Brass Turnings, 10c. to 11c.; Plumbers' Lead Joints, 6c.

PITTSBURGH.

Office of The Iron Age, 20 Fifth Avenue, PITTSBURGH, Jan. 9, 1877.

There has been no improvement in genera business since the date of our last weekly report. Trade in manufacturing circles is reported unusually dull, even for this season of the year, when but little is expected, which may be at tributed, to some extent, to the continued sus-

stock to run up prices. Whether there is any foundation for these rumors your correspond-Coal and Coke Irons-No. 1 Foundry, \$24 to \$25, four months; No. 2 do., \$22 to \$23; Gray Forge, \$21 to \$22. Anthracite—No. 1 Foundry, \$24 to \$25, 4 mos.; Gray Forge, \$20. Hanging Rock Charcoal-No. 1 Foundry, \$27 to \$29, 4 mos.; No. 2 do., \$25; No. 3, at mill, \$23 to \$24. Manufactured Iron .- There has been no

improvement in the demand during the past week, and prices to manufacturers continue very unsatisfactory. Quite a number of the mills are still stopped, taking stock, and making repairs, and as things now look they will be in no hurry about starting up, as there is a general disinchination to piling up stock. It is hoped that business will brighten up within the next week or two, that orders will come forward more freely, and as prices have certainly touched hard pan, buyers need not be timid about stocking up. Merchant Bars are quoted at 1.90c. to 2c.; Sheet Iron No. 24, 3.30c.; Plate Iron, 2.90c.; Hoops, 1.80c. rates. improvement in the demand during the past 3.30c.; Plate Iron, 2.90c.; Hoops, 1.80c. rates. These prices are at 60 days, with usual discount of two per cent for cash.

Nails .- Trade continues dull, and nearly the factories, both here and a Wheeling, are idle. Some of our manu facturers look for an increased demand within the next week or two, and while stock in bands of jobbers are light, manufacturer and their agents are well supplied. No change whatever in prices; \$2.75, 60 days, for 200 ker lots and upward, with usual discount of 2 pe cent. for cash. A regular meeting of the West ern Association takes place here to-morrow.

Steel.-The demand, while it cannot be termed active, is about all that can be expected at this particular time, and our manufactures generally are fairly supplied with orders. No recent change in prices, which are lower that they have been in the history of the trade in this country. Tool Steel quoted at 12c.

Horse and Mule Shoes .- Shoenberger & Co. continue to quote the former at 41/c. and the latter at 51/2c., cash.

Scrap.-There is little or no movement in Scrap, and while stock in hands of dealers is comparatively light, it is fully up to present wants which are very meager. No. 1, Wrought, \$25 : Car Wheels, \$20 to \$22.

Glass .- The Window Glass trade continues very dull, with only about one-half of the facto ries in operation. Prices unchanged; car load lots 50 per cent. off; smaller quantities, 45. Bottle trade also, very dull; green quoted at 75 to 75 and 10; and black, at 60 off. The Flint Glass trade is worse then it has been at any time since the panic; light demand and very un atisfactory prices.

Petroleum .- No demand whatever for ex port, and it is rumored that some of the refineries here will shut down before long.

BOSTON.

Jan. 6.—Pig continues to tend downward, with the supply steadily on the increase. No new blast furnaces are being blown in, but the receipts from those already in blast are more than sufficient for the demand. We quete: No. 1, \$21.50 to \$22; and Gray Forge, \$18.50 to \$19. Scotch pig is dull, partly on account of the decline in gold. Bar is very quiet, and may be quoted at \$47 to \$48 for Reflued and \$38 to \$39 for Common. Copper is quoted at 19%c. to 19%c. for large lots of Lake ingot, and 19%c. to 20%c. for small lots. The market is a trifle steader, based partially on the more warlike news from Europe, but is not very strong. For Manufactured we quote: New Sheathing, Sic.; Bolts and Braziers, 32c.; Tellow Metal Bolts, 36c.; do, Sheathing, 21c. Land is rather weak in tone, but prices are no lower. We quote: Pig, 63%c. to \$4%c., carrency, for Domestic; Sheet, \$9.4c.; Pipe, 9c.; Tin Lined Pipe, 16%c.; Bar Lead, 83%c., less usual trade or 10 per cent. discount. Antimony is quiet at 13%c. to 14c., gold, for Boston spot lots, and Spelter continues weak at \$6.75 on the spot for 10 ton lots. The continues rather easy, with a limited demand and increasing amplica. JAN. 6 .- Pig continues to tend downward We quote: No. 1 Foundry, \$21; No. 2, do, since the holidays no important sales have been effected. The feeling is a trifle stronger, however, and the tendency toward higher prices. We quote Domestic at 6.05c. to 6.10c., currency. Foreign dull and nominal at 6%c., and There is no change to report, and spelter continues weak at \$6.750 on the spot effected. The feeling is a trifle stronger, however, and the tendency toward higher prices. We quote Domestic at 6.05c. to 6.10c., currency. Foreign dull and nominal at 6%c., \$7.50; Coke, \$6.25 to \$6.50; and Terne at pold. Manufactured is steady. We quote: Bar

ST. LOUIS.

Messrs. Spooner & Collins, from commission agents, 409 North Third street, St. Louis, under date of Jan. 4, report the Iron market as follows: Our market remains about the same as last quoted. We look for a change for the better in the course of a few weeks. Prices were firm at quotations. are firm at quotations.

CHARCOAL

CHARCOAL,	ш
Missouri No. 1 Foundry \$23°00 @ 25°00 — mos	
COK E.	ı
Alice H. R. Ex. No. 1 F'dry. \$36.00 @ -4 mos. No. 1 F'dry. 25.00 @ -4 mos. No. 1 F'dry. 23.50 @ -4 mos. No. 2 F'dry. 23.50 @ -4 mos. Formatry. 23.50 @ -4 mos. Chattanoogs, Tenn., No. 1 Foundry. 25.00 @ -4 mos. Chattanoogs, Tenn., Forge. 23.50 @ -4 mos. Chattanoogs, Tenn., Forge. 23.50 @ -4 mos. Chattanoogs, Tenn., Forge. 23.50 @ -4 mos. Mhite and Motified. 21.00 @ -4 mos.	1 1 1 1 1 1
STONE COAL.	1
Missour: No. 1 Foundry\$25:00 @ 26:00—4 mos. No. 2 Foundry23:00 @ 24:00—4 mos. Gray Mill	and the last last last last last last last last
COLD BLAST CHARCOAL—All Numbers.	
Tennessee 30.00 @ 33 00-4 mos.	1

CINCINNATI.

sales during the past week, and the market is firm at current rates, while no advance has taken place. While there is, it must be adfirm at current rates, while no advance has taken place. While there is, it must be admitted, much room for improvement, yet in the status of trade it seems there is every reason to be hopeful that a better state of things will soon be reached. Indeed, from information carefully compiled of the actual coudition of the market, we cannot see how prices can much longer be kept down to their present level. It is true the market has frequently, during the present long depression, from which we appear present long depression, from which we appear to be now emerging, been temporarily very firm, leading to hopeful predictions which were not then to be realized, but the conditions were en-HOT-BLAST FOUNDRY.

	coal % ton. \$24.00 @ 24.50-4 mos
	Hanging Rock No. 2 Charcoal 22 58 @ 23:00 4 mos
y	No. 1. Coke 24:00 @ 25:00-4 mos
	No. 2, " 22.00 @ 23.00-4 moe.
18	No. 2, "
1-	_coal 22.00 @ 29.50—4 mos.
	Virginia No. 1, Coke 28:00 @ 24 00-4 mos.
d	No. 2, " \$1.50 @ \$2.00-4 mos.
8	Ala. and Tenn., No. 1, Charc't 23:00 @ 23:50-4 mos.
	" No. 2, " 22.00 @ 22.50-4 mos.
8	Red Short, No. 1, Coke 25 00 @ 25 50 -4 mos.
e	Fannie U. S. Scotch, No. 1 24 50 @ -4 mos.
60	Allee No. 1 95:00 A mos
œ	Am. Scotch, No. 1 25.00 4 —4 mos. —4 mos. —4 mos.
	Am. Scotch, No. 1 44 00 (3) —4 mos.
r	FORGE IRONS.
t-	Hanging Rock No. 1, Char-
	coal 10 ton \$21.00 @ 21.50-4 mos.
	Hanging Rock No. 1, Coke 21'00 @ -4 mos.
e	Virginia, No. 1 20.50 @ 21.00-4 mos.
	Ala, and Tenn., No. 1, Charc'l 21.50 @ 21.00 -4 mos.
d	Red Short, No. 1, Coke 22:00 @ 23:00-4 moe.
8	Cold Short, No. 1, Stonecoal 19:00 @ 20:00-4 mos.
0	CAR WHEEL AND MALLEABLE.
n	Hanging Rock
-	Southern and Western Brands 35 00 @ 40 00-4 mos.
D	

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Jan. 8, write us as follows: The market continues without change either in prices or tone. The stocks of all grades of Hot-blast Iron in this market, or furnaces tributary thereto, are small, and any considerable demand during the next four months must necessarily stiffen prices. The stocks of Car Wheel Iron are ample to neet all prospective demands. The usual time, four months, allowed on quotations below: Jan. 8, write us as follows: HOT BLAST CHARCOAL.

and make a commence and
No. 1 F'dry, from Hanging Rock Ores. \$24.00 @ 25.00
,, 8 ,, 55.00 @ 53.00
" 1 Mill, " " , 20.00 2 21 00
I F Ury, from Ambami, Georgia
and Tennessee Ores 21.00 @ 23.00
" 2 F'dry, from Alabama, Georgia
and Tennessee Ores 21.00 @ 22.60
" 1 Mill, from Alabama, Georgia and
A min, from Alabama, Ocolgia and
Tennessee Ores 20 00 @ 21 00
HOT BLAST STONE COAL AND OOKE.
No. 1 F'dry, from Hanging Rock Ores. \$22.00 @ 23.00
" 1 F'dry, from Alabama, Georgia
and Tennessee Ores 21.00 @ 22.00
" 2 F'dry, from Alabama, Georgia
w E dry, from Prinonnia, Georgia
and Tennessee Ores 20.00 @ 21.00
" 1 Mill, from Alabama, Georgia and
Tennessee Ores 20 00 @ 21 00
No. 1 F dry, from Missouri Ores @ -
11 0 11
65 -
" 1 Mill, " " 23.00 @ 25.00
1 min, 40 00 (g) 25 00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores. 35-00 @ 43-00 Tennessee Ores. 26-00 @ 28-00 Alabama and Georgia

CHATTANOOGA.

Ores.... Car Wheel from Kentucky Ores...

Mr. 8. B. Lowe, under date of Jan. 6, reports as follows: For the past few days there have been no changes worthy of note in Forge Irons. The shipments, bowever, are steady at quotations. Considerable inquiries are being made for Muck Bar and some transactions are reported. There has been considerable movement in the better grades of Wheel Irons, and shipments have been made to points in the West and Canada, and prices have decidedly an upward tendency.

A	
COKE.	
No. 1 Foundry, extra	19:00 @ 20:00 17:00 @ 18:00
White and Mottled	15.00 @ 15.50
HOT BLAST CHARCOAL.	
No. 1 Foundry No. 2 Foundry Gray Forge White and Mottled	20.00 @ 21.00 18.00 @ 19.00 16.03 @ 16.00 15.50 @ 16.00
COLD BLAST CHARCOAL.	
Car Wheel Metal. Forge Metal. Muck Bar. Cast Scrap, Heavyper ton, Cast Scrap, Light. Old Car Wheels No. 1 Wrought Scrapper lb. No. 2 Wrought Scrapper lb. Srown Hematite Ore, 50 to 56 per cent.	30°00 @ 53°00 17°00 @ 20°00 30°00 @ 33°00 12°00 @ 15°00 8°00 @ 10°00 17°50 @ 18°50
pet ton	\$2.00 @ 2.50 1.80 @ 2.00

BALTIMORE.

Messrs. Wyeth & Brother, Iron and Steel merchants, 46 and 48 South Charles street, report us the following prices under date of Jan. 9: We have again to report an exceedingly quiet week in trade circles, owing largely to the existing ice blockade, and unusually severe weather. Business rules quiet at unchanged values. changed values.

AMERICAN REPUNED BAR 180%.	
1 to 6 wide by 1/4 to 1 thick 2 15 to 21/4.	# 1
Round and square, ordinary sizes, from	
% to 2 inclusive	16
floop Iron, 1% wide and upward 3% to 8%c.	64
Band Iron, from 11 to 4 in. wide 4 to 31/c.	6.5
Horse Shoe Iron % to 1 wide by % to %	
thick 3% to 4c.	6.6
Norway Nail Rods 6 to 6%c.	66
Black Diamond Cast Steel, Flats, Squares	
and Octagon, ordinary sizes 14% to 15c.	44
Machinery Steel 8to 9c.	44
Cast Spring Steel	64
Homogeneous Steel Plate	91
Perking' Horse Shoes nor kee of 100 lbs	4-40
Perkins' Horse Shoes, per keg of 100 lbs, \$ Mule Shoes	K-69
R. R. Spikes	0.00
Common Horse Nails, from 14c. to 18c, per pound	10 0
To amount or se realis, from 14c. to 18c, per pound	Bo
Putnam Horse Nails, 23 24 25 26 28c. pe	er 1

Messrs. R. C. HOFFMAN & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of Jan. 8: We have no changes to note in the Iron market since our last report. Business very light, and sales con-

Haltimore	Char	00	al	١.								0		 	\$29	.00	0	32.00
Virginia	0.6				0	0	 				 				28	00	00	35.00
Anthracite	No.	1.			0		 	 0	0				0 0		99	.00	0	23:00
84	No.	2.					0	 	0			٥.			20	1.60	00	\$5.00
4.5	No.	8.							۰									
White and	Mort	le	đ							 					16	.00	30	18:00

RICHMOND.

Mr. Asa SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of Jan. 8: Stock taking, frozen harbor and politics have suspended the Iron market. No change in quotetions.

| Virginia cold-blast Charcoal Pig Irons, \$28.00 @ 35.00 | Virginia hot-blast Charcoal Pig Irons, \$24.00 @ 28.00 | Va. hot blast Coke Pig Iron, No. 1 ex. 24.00 @ 25.00 | Va. hot blast Coke Pig Iron, No. 2 ex. 29.00 @ 29.00 | No. 3 ex. 19.00 @ 20.00

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels).

FRANCE.

(Moniteur des Interets Materiels).

FARIS. Dec. 24, 1876.—Metals.—Urgent requirements for mid-winter having been laid in, and there being no further anticipation of wants for the present, business in metals has become very quiet. Copper has not escaped this depressing influence, and all animation has disappeared from our own market, which closes quite weak, as follows: Child Bars. 202: 50 frances; Common ditto, 197:50; fingois, 206: English Tough Cake. 307:50; Best Selected, 210, and pure Corocoro Ore. 200. At Havre nothing has transpired; they quote first brands Chill Bars. 200; Current ditto, 197:50; and Lota and Urmenia, 195 to 196:25. No particular change is reported from Marseilles, where Spanish in Slabs still commands 190; Red Tokat, 195; Small Refined Ingots, 200; Steathing, 240; Bolts, 245, and Yellow Metal Sheathing, 210. The —According to the correct statistics received from London, the position of Tin in its unfavorable aspect is sufficiently explained. We now fully understand why the stock at London has continued to increase rather than diminish; we perceive thereby that the Anstralian supply has been, and is a sample as ever, and that even the Straits have kept up shipments pretry steadily. Prices have, nevertheless, been well sustained here; we quote Banca, deliverable at Havre or Paris, 207:50; Billiton, 202:50; Straits and Australian, 205, and English to be delivered at Havre or Rouen, 302:50. At Marsellies, on the contrary, Tin has quieted down somewhat; they quote English and Bunca, 210 to 215; Straits, 200, and Billiton, 200. Lead has been in a wavering position; the war demand has ceased for the moment, although the outlook ir the East cannot be called positively peaceful. On the other hand, the consumptive demand has come forward more vigorously, and a fair inquiry has thus been kept up, counteracting the otherwise weakening tendency. Here firmness has predominated, there having been a gool export demand, causing stocks to dwindle down very much. French, Belgian and German have be

so far from discouracing us, it stimulates Belgian industry into other directions. Coal.—There is no change whatever in the Belgian markets. Very little is doing on the spot and less to arrive. There is a movement on foot in Spain to test the Coal of that country under supervision of the Admiralty, in order to see whether a great impulse causon be given to Spainsh Coal production, and although we do not export much Coal to Spain, these endeavors should not be overlooked.

GERMANY.

(Borsenhalle).

Hammung, Dec. 28, 1876.—Metals.—Business in metals has been proceeding with tolerable regularity; we are now approaching the interecting period of the abolition of duties on Iron and Steel, frequently referred to, an experiment doubtful in its results. Trade has been more active than is usually the case at this time, especially in Copper, but prices have been ill sustained. Berlin has been comparatively quiet, good quality English and Australian selling between 82 and 86 marks the 50 kilos, and Mausseld from 89:50 to 90. At Stettin, English is quoted 93. There has been no change here. A lot of Lake Superior has been no flored on our market, but too much money being asked for it, it has remained unsold, Tia.—The tendency, if anything, has been a rather more favorable one in our markets. There has been no alteration here; at Berlin, the quotation for Sanca is 81:50 to 82 marks, and English 79:50 to 80 the 100 kilos. Lead.—The situation remains about the same as heretofore reported. At Berlin prices have been ranging from 22 to 22:40. There is but a limited stock here, and prices are firm at 23 to 29:50 for German Pag; we quote English Pig 3:50 to 94, and Sheet 24:50 to 25. Speller has been generally quiet, with prices harely sustained. Berlin quotes good brands Silesian from 22:50 to 23:25 the 50 kilos. Stettin is sustained at 23 to 25:50, and here we are nominal at 23:50 for spot, and 94 futures. (Borsenhalle)

HOLLAND.

ROLLAND.

(Kock & Vherboom).

ROTTERDAM, Dec. 21, 1876.—Tin.—Tin is dull. Banca on the spot has sold from 45% guilders down to 45%, and to be delivered from the January sale at 45%. Billiton to arrive, sold at 44%, and subsequently at 44%. Of Australian, 35 tons were realized at a figure not transpired. Interesting news has reached us from Banca regarding the third quarter of the current year. The accounts are from the nine provinces of the island. According to these statistics the amount on hand on the first of July was

48,370 piculs, to which there were added 3008 piculs during the ensuing three months, constituting a total supply of 51,378 viculs, out of which there were shipped up to Octob r 1st, to Java, 20,050 piculs, leaving on hand 30,388 piculs.

GUIDIES.

GUIDIES.

GUIDIES.

GUIDIES.

GUIDIES.

SINGAPORE. Nov. 23. 1876.—Tin.—There is no change in the position of the market as to supplies, which have been coming forward on a moderate scale, but prices have given way, owing to toe unfavorable news from 1 ondon, and there are no buyers at better than \$0.050 per picul. Advices from Penang quote the value of unsmelted Tin weak at \$20.625, per picul, with a moderate stock. Tonnog.—The supply of disen, i.g.d. vessels is small, and borth rates to England are steady at 40/10 42/6 for deadweight and 50/ for light cargo. There have been no charters for the United States during the past fortnight. The Brothers German is still londing for New York, and the Star of the South for Boston. The steamship Glenearn, from China for New York direct, called here and took \$34 tons Tin at 30/ per ton. Exchange.—The ecarcity of dollars continues, and the rate has further advanced to 4/2% for 6 months' sight credit drafts on London.

Canton, Nov. 22, 1876.—Lad unaltered. There are buyers in the market for psycles affoat at \$4 to \$8:10 for L B and "hole chop," and on the spot \$8:10 for L B and "hole chop," and on the spot \$8:10 for L B and "hole chop," and on the spot \$8:10 for L B and "sole chop," and on the spot \$8:10 for L B and "sole chop," and on the spot \$8:10 for L B and "sole chop," and on the spot \$8:10 for L B and "sole chop," and on the spot \$8:10 for L B and "sole chop," and on the spot \$8:10 for L B and "sole chop," the process affoat at \$8 to \$8:20 might be obtained. Sales, 700 plgs. Quotations, \$8:05 to \$8:50 and \$8 per formight at prices advancing from \$85 to \$8:50 and \$89 per picul; the news of a decline at home, however, has rendered holders anxious to realize, and since yester-day prices have dropped fully \$5 per picul. At the close sales are most difficult to effect. Sales, 4100 flasks. We quote English, \$80 to \$8:50: Californian, \$81:50 to \$82.

AUSTRALIA.

(South Australian Advertiser and Wallarvo Times.)

Wallanoo, Nov. 4, 1876.—Copper.—Burra Burra Mines.—The report of the South Australian Mining Association states that 901 tons of Ore, averaging 77 per cent. of fine Copper, were raised during the half-year ending September 30. The haulage from the open works has been as follows: Deads, 16,790 tons; Ores Stuff, 21,382 tons; Old Timber, 1034 tons; other parts of the mine, Deads, 6000 tons; Orey Stuff, 5000 tons; old Timber, 192 tons; total, 50,325 tons. Dressing; 32,000 tons of Stuff have passed through the dressing machinery; Tower Machinery, 10,000 tons, yielding 316 tons of 333/p er cent., and 53 tons of 17 per cent. Ore; and through the 30 heads of stamps, 22,000 tons, yielding 370 tons of 373/p pr cent. Ore; tributes yield about 254 tons of 373/p pr cent. Ore; tr

The Bus'ness Outlook.

Our intelligent contemporary, the New York Daily Bulletin, says :

Despite the rude check which the political complications have put upon the trade of the country, there seems to be a certain limit beyond which this cause of depression has little effect. The severe trial through which business has passed for the past three years and the consequent timidity of merchants were calculated to make trade all the more impressible to the discouragments arising out of the political situation; and hence the reaction that set in immediately after the election is not surprising. At the same time, the first half of the fall trade gave unmistakable evidence that a

business, in which all benefit, the buyers themselves being the better enabled to buy, and, to the extent that it goes, it sets the machinery of business agoing all round the circle. A necessity of this kind is a very influential motor in trade, and cannot be wholly neutralized by any anch influences as have arisen from the elec-

What is true of the stocks of articles of utilfty in our homes is equally true of the supply of goods in the hands of merchants and retailers throughout the country. Partly from the lack of demand, partly from the fear of losses arising from a constant decline in prices, partly from the limitation of credit facilities, partly from a common spirit of caution, and partly from the selling out of a very large number of bankrupt dealers, stocks of all kinds of goods have been reduced to a limit almost unprecedented. If credits became more elastic, and prices should seem to have touched bottom, and especially if there were any signs of an improvement in the demand from consumers, there would be all the conditions needful to a general replenishment of dealers' stocks throughout the country. It will not be disputed by those most familiar with the course of trade that, up to the date of the elections these conditions were being gradually realized to a very satisfactory extent. It was felt that the severe weeding out of insolvent firms had left the more trade to those who had withstood are having inquiries for their hay presses both the test : and hence sound merchants found no from Africa and South America,

difficulty in getting a reasonable amount of credit; and it is not likely that the political situation will induce any large proportion of merchants to curtail their credit operations when their commercial spirit has conquered their party animus, as upon the sober accond-thought it must. Moreover, wages in the manufacturing districts and the prices of goods appeared to have touched a solid bottom and were even beginning to show an upward tendency, and the unfavorable conditions of the last five weeks have not produced any visible impression upon this general steadiness of This must be regarded as one condi tion in favor of the coming season. In short, but for the intervention of the election dispute, there is every reason to conclude that the im provement that set in with the fall trade would have received further development during the business of next spring.

It is, of course, a debatable question how far the political situation should properly interfere with business undertakings. The misfortune is that men generally feel that the expression of a certain degree of fear is necessary for the sake of consistency with their partisan attitude : and we very much doubt whether the apprehension expressed does not exceed that really felt. So far as our observation goes, all heavy plate fron, sustained by 10 cast fron pildemocrats are willing to see a republican president if by that means trouble can be es- of the stack is a steam hoist for hoisting the caped; and all republicans are equally ready to waive the chances of their candidate if that The stock is run on cars and conveniently should be necessary to harmony; and while this willingness to yield in an emergency may encourage both sides to make a show of fight in order to gain the ultimate advantage over their opponents, it shows in the public mind an estimate of the supreme importance of maintaining political order that both sides in Congress will be compelled at last to respect.

We are not to lose sight of the fact that, since the election, the price of gold has fallen nearly three points. The decline has occurred in spite of and not in any sense in consequence of political events; and the fact that large im portations of gold and the condition of the exchanges have been able thus to force down the premium shows that the public really do not Had there been any very serious apprehension In connection with the elections, a matter of such commanding importance should have put of Pailadelphia. up the price of gold in spile of the influx of gold from Europe; but when we have the op posite result in such a marked degree, what is the fair inference as to the commercial estimate of the political situation? We wish to be dis tinetly understood not as showing what the estimate ought to be, but what it really is.

What British Hardware Manufacturers Have to Do.

The last number of the Ironmonger takes the British manufacturers to task for not furnishing what the people demand, and admonishes them, if they expect to retain their trade, to adopt the plan of supplying the article the consumer requires. "Many old patterns will have to give way in this country," it says, "in favor of more handy goods in frequent use throughout the New World. The essence of the American's success consists in the fact that he always EXILITY.

(Revue Universitie).

Hauseria. Det 24, 1876.—From.—One of the most striking signed on 24, 1876.—From.—One of the most striking signed on 1876.—From.—One of the most striking signed on 24, 1876.—From.—One of the most striking signed on 1876.—Iron.—One of the most signed stream, in step of placing some size of pick up any kind of orders, however, and succeeded in securing an order for 8800 tons for the mile with six some six signed on 1876.—Iron.—One of this revival, they still have a cateful degree of vitality; and it is reasonable to assume that they will continue to operate, and, in some measure, counteract the bad effects of the party of South Wales, to be delivered at London. This is an important steet, proving that we can be they will continue to operate, and, in some measure, counteract the bad effects of the party of south Wales, to be delivered at London. This is an important steet, proving that we can be they will continue to operate, and, in some measure, counteract the bad effects of the party of South Wales, to be delivered at London. It is not to be overlooked that three years of extraordinary curtallinent of purchasing by the mind party in the place thereof 20,000 tons prevaluation.

It is not to be overlooked that three years of the party of the place thereof 20,000 tons prevaluation.

It is not to be overlooked that three years of the party of the place thereof 20,000 tons prevaluation.

It is not to be overlooked that three years o supplies just what the consumer wants, or Because the English axe makers were too proud or too indolent to take a lesson from the Americans, who, utilizing their great experience in the use of such a tool, have produced the best possible instrument for the purpose. Doggedly the English axe maker has gone on making an imperfect tool, and has forced the consumer at home as well as abroad to buy oftentimes reluctantly, the American product. Less than ever can we afford to repeat that and other mistakes which are now occurring in a not dissimilar line of business; for it will most certainly come about that additional agencies will be opened in this country for supplying such goods. Even at this moment the electroplate goods of a leading electroplate company of America are being sold in Birmingham ; and through a central agency there, what are known as 'Canadian' gold Albert chains, which are really excellent goods of United States make, are being sold throughout the whole of England. Established English ironmongers have a right to look to English hardware firms to supply them with goods that the English people may demand, without driving them to resort to present or future American agencies.

> either in Birmingham, Liverpool, or London.' In our mention week before last of an order for the Mohawk and Hudson Mfg. Co., Watertown, N. Y., for hatchet machinery for Ger many, we made a slight mistake in the style of

The Bechtelsville Iron Company.

The works of the Bechtelsville Iron Company are located at Bechtelsville, Berks county. Pa., on the line of the Colebrookdale Railroad, a branch of the Philadelphia and Reading, extending from Pottstown to Mount Pleasant. Ground for the erection of this stack was broken September, 1874. After some slight delays, caused by disappointment incident to an undertaking of this kind, we are glad to learn that everything so far has been completed for blowing in the furnace. Raw material and fuel especially selected are now being delivered at the furnace bank, preparatory to filling, and within a very short time it is expected that the match will be applied. From the selection of stock it is the expectation of the company that they will put upon the market an iron of superior quality. Their aim is to supply an iron that combines the elements of softness, fluidity and strength, on which uniformity of grade and quality can be relied on, so that the product of a given date can be reproduced at any subsequent time. The works embrace about 161/4 acres of ground. The cast house is a substantial building, 50x100 feet; the stack is 63 feet high, with 58 feet smelting capacity, of lars; the bosh is 15 feet diameter. In the rear ore, limestone and coal to the tunuel head. dumped into the stock house, which is 50 to 300 feet; on the east side of the cast house are the hot ovens, boiler and engine houses. ovens are double, and so made that half the pipes can be used while the other half is being repaired, thus preventing delay in case of accident. The ovens are 14x28 feet on the ground and 30 feet 6 inches high. The boiler house back of the ovens contain 8 boilers, four 60 feet long 40 inches in diameter, and four 40 feet long and 30 inches diameter. The engine house contains an upright direct acting high pressure engine; steam cylinder, 36 inches diameter 6 feet stroke; blowing cylinder, 7 feet diameter, same stroke as steam cylinder; fly-wheels, 20 feet diameter-each wheel weighs about 18 tons. attach any very grave importance to the politi- The success and completeness of these works cal question in estimating commercial affairs. are largely attributable to the energy and labors of the president, Mr. Wm. H. Berlin. For particulars we are indebted to Mr. J. V. Umberger,

Piece Work.

The Engineering News, in an article showing that the present system in our large machine stops is not favorable to the education of master workmen, says:

Where a large contract for machines of any kind is taken, or a number of parts have to be made, the aim is to have as much done by year upon which we have entered will witthe machine tools, and as little by band as pos- ness an improvement in the important class sible, reducing the amount of fitting up to a of industries represented by these corporaminimum. For example, in gun work, the tions. The curtailment of production, parts of one arm are interchangeable with those economizing of expenses of every kind, the of another of the same pattern; the same thing reduction of operatives' wages, together with is true with good sewing machines, and, in fact, renewed efforts to place goods in foreign marwith all the articles which are produced in kets, where of late they have made but little quantity. The forgings as far as possible are headway, are all elements in their favor. nade by dies, the drilling and turning, the The improving condition of business interplaning and shaping are done on machines ard este at home, stimulating domestic consumpranged with stops and guides and tested by tion, must also contribute to make the future gauges, so that no careful attention is necessary more promising, certainly, than at any time after the tool is once set. Then the use of since the panic. True, it may not be prolific milling machines enables one to produce sur- of the enormous dividends of the war and faces more or less irregular, which would once ante-war periods, but we have no doubt, if no have been roughed out as well as finished by new catastrophe happen, the returns for the the file. Indeed, much of the filing is done capital invested will at least be satisfactory. when the object is clamped in a templet or This, as regards the well managed companies. form, so that it must be perforce brought to As for the other kind, they will be fortunate, in

the desired shape. The ordinary workman then may tend a lathe or planer, or may file at a vise, repeating the same or similar processes for months, earning fair wages and turning out an immense amount of work, as he naturally acquires a certain amount of dexterity in a specified operation. Even the fitter assembles the same tions from day to day in one narrow round. There is employment for a few men who sink the dies, mak: the templates and gauges, lay out the work in the beginning, and repair such Boys are put at tools as require it. ing screw and nut machines or lathes where 2 inches thick. Warm the same in the fire, and the operations are entirely mechanical. Where, place securely on the gauge, as near as is practhen, among the hundreds of men often employed in our large shops will you find a suffi | welding, and weld them on the improvised ancient number of boys who are so employed as vil-or fron block-and dress up after welding to have any instruction in the rudiments of a on the anvil. machinist's trade, or any probable chance of learning the different ways of manipulating or any similar purpose, when only a red heat is iron, steel and wood, from the raw material to required, it is much better to do it in a bath of the finished product? A sufficient number, we melted lead than to put it in the fire. A momean, to replace the men who from time to ment's neglect or inattention when the steel in time retire by reason of old age or other disa- in the fire may burn or ruin it utterly, leaving

here, boys under systematic and definite in- maining in it a little too long will be in no way struction are not so frequently to be found as injured. is desirable. The system of apprenticeship three years, scanty time as it is for accomplish. paying investment. ing any good result, seems long to the shop boy, when he might be tending a machine or working at piece work for himself in such establishments as we first referred to.

Edward Binns, a son-in-law of Dr. C. G. Hussey, and a member of the firm of Hussey, Binns & Co., shovel manufacturers, of Pittsleft comparatively few to be distrusted, and had the firm, which we now correct. The company burgh, died in San Francisco on Saturday. Deceased had visited California for the benefit of his health.

New England Manufacturing Stocks

If the market value of the shares of the New England manufacturing corporations be accepted as tests of their business during the past year, it is a warrentable inference that. discouraging as have been the experiences of the majority of them, there is still a strong faith on the part of the capitalists and investors in the permanent value of such investments. Thus, of the forty-three companies whose shares are quoted at the Boston Stock Exchange, it is found that fifteen are higher by several per cent, at the commencement of the new year than they were on the 1st of January, 1876. On the other side of the account, however, there are twenty-eight that show more or less depreciation; but even these, we observe. managed to pay dividends for the latter half of the year, ranging from three to six per cent. Among the corporations that have made the most noticeable improvement are the Amoskeag, Lawrence, Massachusetts, Merrimac and York Mills. The companies that exhibit the most depreciation are the Pacific, Hamilton, Boott, Lancaster, Lowell, Nashua, Otis, Pacific, Thorndike and Stark. The following is the list

44	X12 4 15.	B < 7 0 0
Companies.	Jan. 1.	Jan. 1.
moskeag	1.850	*1,600
	. #100	*102
ppleton	890	H-4/2 M
tlantic	50	101%
Sartlett	25	25
Bates	67	*7234
Boott	1.500	1,45736
Boston	900	875
Boston Duck	695	700
'abot	400	*400
hicopee	*10.1	*102
locheco	705	*675
Continental	80	80
Owight	350	350
everett	. 18%	78
ranklin	84	75
reat Falls	66	77
Iamilton Cotton	922 16	
Woolen	*170	900
IIII		150
ackson		75
Cearsarge	. 975	850
aconia	45	39%
ancaster	350	33236
AMERICA CO.	775	550
awrence	. 1,000	1,050
owell		565
Dieachery	*500	*342
" Mach. Shop	675	755
yman	63	60
Manchester	*110	*116
dassachusetts	1,000	1.040
derrimack	1.167%	1,205
Middlesex	13136	*134
Nashua	572 %	*536
Naumkeag	95	97
Newmarket	500	450
New Eng. Glass	275	-
)tie	1.150	1,050
Pacific	*1.900	*1,700
Pepperell	730	720
Salisbury	35	22
Salmon Falls	175	100
Sandwich Gl'es	80	3134
Stark Malls		800
Fremont and Suffolk		120
Phorndike	1,000	900
Washington	67	6
York Mills	1,225	1,370
	,	1,010

* Ex dividend.

There is good reason to anticipate that the any event, if they do not go to the wall .-Daily Bulletin.

Hints for the Shop.

In welding tires do not, if light steel or fron, edge up" or hammer on the edges at the weld. Weld solidly on the flat surface; trim pieces, and goes through the same manipula- the edges with a sharp chisel, and dress with This method saves time and insures success.

In welding very light steel or fron tires use a flat and smooth surfaced cast or wrought tros block in size shout 4 met ticable to the fire. Then prepare your tires for

When heating a tool or steel rodifor bending it so soft that it is as impossible to harden it as One of the smaller shops, where a considera- it would be a piece of soft iron. No such danble variety of work is undertaken, offers much | ger is found in the use of the lead bath, which better facilities for the young learner, but even | can' be brought up to a red heat; and a tool re-

A little water put on the glass in the factory seems almost to have gone out of vogue. The windows, and a little more of the same liquid, old-fashioned seven years' term, which our mixed with lime, and applied to the wails and elders had to serve, and which gave ample time ceilings of the factory, will not cost much, but for the pupil to become a thorough and skilled it will save gas or other light, enable better workman, was much too long for our restless work to be done, and more of it, improve the American youths, and even the short period of health of the workmen, and prove a generally

Bome one says, very truthfully: "Good files do not cost nearly as much as labor. One man with a file, three days in use, will do more work in one day than two men will do with files that have commenced their fifth week of slipping and scrubbing."

Cold, and other chisels, made from old files, cost four times as much as those made from good cast steel. Moreover, the work done with them costs more, and is not done so well.

with them costs more, and is not done so well.

Do not waste time hammering cold iron, the labor will cost a great deal more in most cases. than the coal required to heat it to a proper temperature for working.

whe Coal Market.

Anthracite. PRICES FOR JANUARY.

	Lump	Steamer	Broken,	Egy	Stove.	Chestnu
PENNSTLVANIA COAL ton additional.	co., at N	ew 3	ork,	40 c	ente	per
Pittston						
DELAWARE AND HU	bson can ken, N.		00.,	at V	Ween	aw-
Lackawanna,	3.00	3.00	3.00	3.00	3.80	3.80
LEBIGH AND WILES	BARRE C	OAL	eo., i	.o.b,	at I	ort

DELAWARE, LACKAWANNA AND WESTERN, at Hobo ken, N. J.-Auction, Nov. 23. Scranton 2.77% 2.70 2.67% 3.59% 3.27%

| PREDERICK A. FOTTS, 110 Broadway, New York. — Port Johnson, Elizabethport and Hoboken. | L. & W. C. Co.'s Wilkes | 3:00 3:00 3:00 3:00 3:75 3:25 | L. & W. C. Co.'s, Old Co. Lehigh | 2:75 | 3:25 3:25 3:25 3:25 3:25 | 3:25 3:25 3:25 | L. & W. C. Co.'s, Plymouth Red Ash. | 3:00 3:00 3:00 3:00 3:35 3:25 | Scranton | 3:00 3:00 3:00 3:00 3:75 3:25 | Scranton | 3:00 3:00 3:00 3:00 3:00 3:75 3:25 | 3:75 3:25 | Scranton | 3:00 3:00 3:00 3:00 3:00 3:75 3:45 |

whitney, m'creary a kemmerer, 111 Broadway, New York,—John White, Sales Agent.—F.o.b, at Elizabethport or South Amboy. | Rilizabethport or South American Rilizabethport or South Rilizabethport o

A. s. swonds, 111 Broadway.-Coal at Newburgh. Pittston Coal... 3.00 3.00 3.00 3.10 3.60 8.35

.. 3 25 3 25 3 75 3 25

G. B. LINDERMAN & CO., No. 111 Broadway. Sugar Loaf, (Lehigh).... 3.75 ... 3.25 3.25 3.75 3.50

MEEKER & DEAN, 111 Broadway.

EHIGH VALLEY COAL CO., COTHER COURTIAND AND CHURCH Sts.—F. o. b. at Perth Amboy.

Spring Mountain Lehigh, 3-75. 3-25, 3-

A. PARDEE & co, 111 Broadway, Room 34.-F. o. b. at Perth Amboy and Hoboken, Hazleton, Sugar Loaf, Lat-timer, and Hollywood

Mount Pleasant, f. o. b. at	8.40	9.10	9.00
Hoboken	3.15	8.50	3.30
			1
Bituminous.			
Cumberland, at Georgetown			- 1
West Virginia, at Baltimore	4.50	in	6:00
Kittaning f. o. b., Baltimore	4.25		4.35
Newburg Orrel, at "			4.50
Despard, at Baltimore		10	4.50
Broad Top, at South Amboy		180	4.75
Morriedale, Wigtons		50	4.75
Cunard		1.0	4.75
at Philadelphia		ØB.	3.90
Consolidation Coal Co. f. o. b., George-		-	-
town		a	3.20
Consolidation Coal Co. f. o. b., Balti-		-	
more		(A)	3.80
In barges at New York		(ch	5.20
Maryland Coal Co. f. o. b., Baltimore.		60	4.00
Waryland Coal Co. f. o. b., Georgetown		0	3.75

London Metal Market.

(From The Mining Journal.)

Pig Gyn t o. h. Clyde 3	8.	d.	£.	a.	41.
Pig, 6MB, f. o. b., Clyde 3 Scotch, all No. 1 8 Bars, Welsh, f. o. b. Wales. 6 in London 6	1	0	3	11	6
Bars, Welsh, f. o. b. Wales. 6 in London 6 Staff'd in London 8	15	0	******	4	
" in Tyne or Tees 6	0	0	10	0	0
" Swedish, London 10 Rails, Weish, at works 5	10	6	10	10	0
Railway Chairs	-		-		
Spikes	15	0	-		
Hoops, Staff	10	0	_		
Nail Rods, Staff'd in L'adon 7	15	0	6	0	0
Rnglish, spring 14 Ditto cast 25	0	9	23 45	0	0
wedish, keg 17	ö	0	-		
Lend. 17	10	0	19	10	6
English Pig. common 22 Ditto, LB	5	0			
Ditto, LB	8	0	_		
Mt10, Pipc 20	10	0	_		
Ditto, White	10	0	24	10	80
Disto, White	15	0	25	0	0
Quicksilver.	5	0		10	
Speiter. Speiter.				10	0
English, Swansea 22	10 10	9	_		
Tin.	10	0	26	0	0
Inglish, ingot, f. o. b 81 Ditto Bars 82	6	0	_		
ustrahan	0	V	-		
&BCA	10	0	-		
Copper. 76	e	0	26	10	0
Cough Cake & Ingot 80	0	0	92	0	0
heets and Sheathing 82	10	0	88	0	0
Tat Bottoms92	10	0	98	0	0
Vailaroo	0	0	53	0	0
ther brands	0	0		0	0
Bearing Metal112 Other Alloys	0	0			
Brass.	0	ě	140	0	0
Wire 0	0	9%		0	934
heets 0	0	8%	ō	0	934
Yel. Met. Sheath. & Sheets. @	0	7%	0	0	9%
Tin flates- box.	4	6	2	6	6
2d qual. 1	8	0	î	4	ő
	19	6	.1	0	0
valis composition 'Tin i 'listes - b' box. 'Tin i 'listes - b' box. 'Larcos' !st qual. ! coke !st qual. ! coke !st qual. ! dans 'dans	V)	0	17	10	0
Liverpool 13	0	U	18	10	0
Black Torrove 450 of 14vin 90	0	(3)			

The Iron Age,

Trades.

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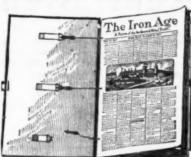
The Iron Age is by far the largest newspaper in the world, each issue, whether Weekly, Semi-Monthly or Monthly, consisting of thirty-six to forty large, five-column pages, containing about fifty columns of carefully prepared reading matter, all of which is of particular interest to the Iron, Hardware and Metal Trade, beside about fourteen columns of Iron, Hardware and Metal Quotations, corrected carefully every

The Iron Age is the only newspaper that has ever succeeded in satisfactorily reporting the Hardware market, either in America or Europe. It has had numerous imitators, but no success-

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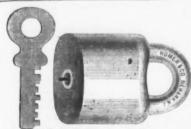
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These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, rolld bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

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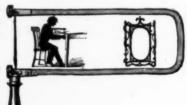
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The Coal Market.

Anthracite. PRICES FOR JANUARY.

	Lum	Steamer	Broken,	Eg.	Stove.	Chestnut.
PENNSYLVANIA COAL	co., at N Deliverab	ew ?	Tork,	40 c	ente	per
Pittston	3.00	3.00	3.00	3.10	3.60	3.85
DELAWARE AND HU	ken, N.		σo.,	at V	Weeh	aw-
Lackawanna	8.00	3.00	3.00	3-00 8	3.80	8.80

DELAWARE, LACKAWANNA AND WESTERN, at Hobo-ken, N. J.-Auction, Nov. 22.

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Spring Mountain Lehigh, 3-75. ... 3-25, 3-25, 3-7

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Lehigh Coels. 3.75 ... 3.75 3.75 3.50

Mount Pleasant, f. o. b. at
Hoboken 3.50 ... 3.15 3.15 3.50 3.30

Bituminous. Cumberland, at Georgetown ... \$3 50 @ \$
West Virginia, at Baltimore ... 450 @ 6
Kittaning f. o. b., Baltimore ... 425 @ 6
Kittaning f. o. b., Baltimore ... 425 @ 6
Despard, at Baltimore ... 5
Broad Top, at South Amboy ... 5
Morrisdale, Wigtons ... 5
Cunard ... 5 town Coal Co. f. o. b., Baltimore.
In barges at New York.
Maryland Coat Co. f. o. b., Baltimore.
Varyland Coal Co. f. o. b., Georgetown

London Metal Market.

(From The Mining Journal.)

Pig. GMB, f. o. b., Clyde	E.	8. 18	d. 6	E.	8.	q.
Pig, GMB, f. o. b., Clyde Scotch, all No. 1 Bars, Welsh, f. o. b. Wales. in London	8 6 6	1 3 15	6 0	6	7	6
" Staff'd in London in Type or Tees	8 6	0	0	10	0	0
Rails, Weish, at works	10	10	6	10	10	0
		_		=		
Sheets, Staff., in London	9	15	0	-		
Sheets, Staff., in London. Plates, Staff., in London. Hoops, Staff. Nail Rods, Staff'd in L'ndon	8	15 15	0	6	0	0
Ruglish, spring	14	0	9	13 45	0	0
Ditto, tag, ham	17	10	0	18	10	6
	24	9	0	-		
Disto WB	25	5	0	_		
Direct Liberrane construct t	20 25	10	0	-	0	
Ditto, White	36	10	0	24	10	91
Spanish	24 21	15	0	- 20	0	0
Flanks of 75 lbs., ware	8	5	0	8	10	0
	21	10	0	=		
Sheet Zinc	28	10	0	26	0	G
English, ingot, f. o. b 8 Ditto Bars 8	15	0	0	_		
	75	10	0	-		
Stratte	17 16	0	0	76	10	0
	90	0	0	89	0	0
Sheets and Sheathing	912 97	10	0	96	0	0
Wallaroo	972 85	10	0	98	0	0
Other brands	84 81	0	0	88	0	0
Other brands	15	0	0	-		
Other Alloys	(2) (1)	0	0	140	0	0
	8	0	954			914
Sheets	0	0	8%	0	0	934
Valis composition	0	0	7%	0	0	9%
Tin tlates F box. Charcoai	1	4	6	1	6	6
Cokelst qual.	1	3	0	1	4	0
Coke. 2d qual. Coke. 1st qual. 2d qual. 2d qual. 2d qual. Canada, Staff. or Gia., at { 1. Liverpool. 2 Black Taggers, 450 of 14x10. 2	7	19	0	17	10	0:
Liverpool	8	0	d.	18	10	0
Black Taggers, 450 of 14x10. 2	10	0	0	for o		

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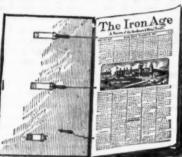
The Iron Age is by far the largest newspaper in the world, each issue, whether Weekly, Semi-Monthly or Monthly, consisting of thirty-six to forty large, five-column pages, containing about fifty columns of carefully prepared reading matter, all of which is of particular interest to the Iron, Hardware and Metal Trade, beside about fourteen columns of Iron, Hardware and Metal Quotations, corrected carefully every

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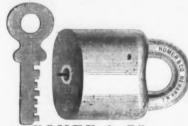
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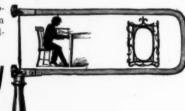
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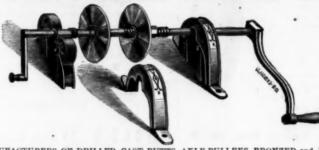


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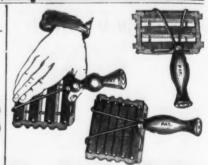
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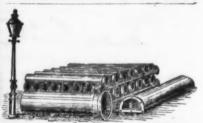
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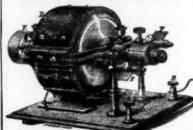
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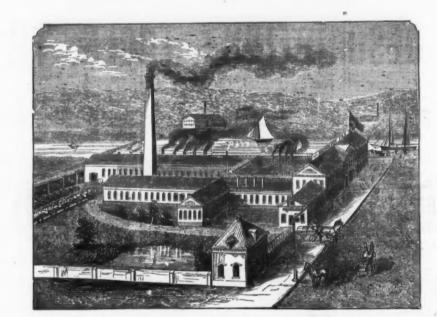
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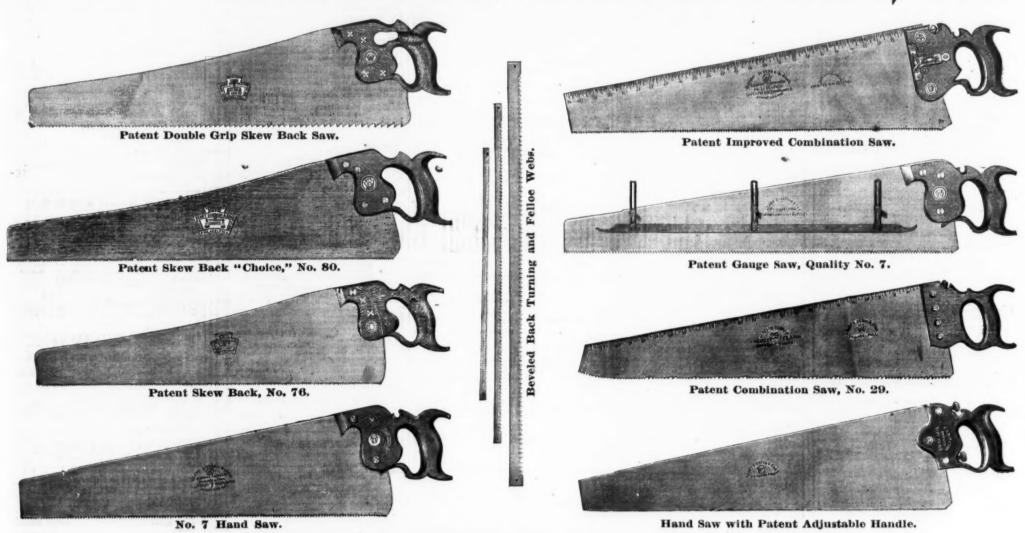
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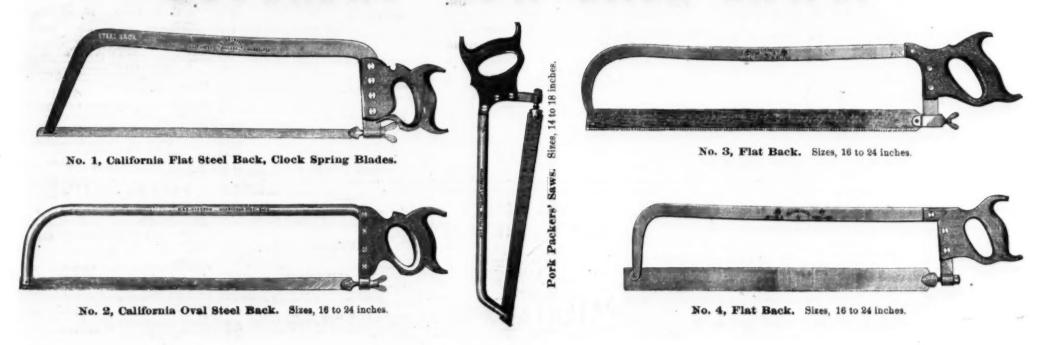
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Ivesdis 40&10 ; Beecher French, Swift&Co) ist qualitydis 40&10 ; Griswold Nobles Mfg. Co	Loose Joint Broad	die 40d:5 %	National Emery. Genuine Chester-Regular Nos. Genuine Chester-Regular Nos. Flour and FF Washington Mills-Regular Nos. Flour. Wellington Mills Grain. Flour Ennmeled and Tinned Wikettles. Sance Pans. Glue Kettles. Tinned Saucepans. Excettleenss.	dis 30 @ 35 %dis 30 @ 35 %dis 30 @ 35 %	Winsted Planters' Pattern.	dis 10 %	Greenfield Tool Co
Notice Mfg. Co Carson Patent Cook's, Douglass Mfg. Co dis 50&5		dis 40&5 %	Brass Thread	dis 60&10 %	Cotton	tis 60&10 @ 70&10 5 dis 50 5	D. R. Barton Tool Co
Jennings Bits	Am. Spiral Spring Butt Co. Ilst May Union Spring Hinge Co. Un.oa Mig. Co. Spring Hinges Blind Butte, Parker. Paimer. Seymour. Shepard. Luil & Porter. Nicholson.	dis 20 % dis 25 % dis 65&10 @ 70&10 %	Wood. Fancers. Fenn's. " Cork Stops Star. Wood and MetaNic. Wood, Cork Lined. Enterprise Mig. Co., Seit-Measur Felles Plates. Files.	dis 50 ≴ dis 40 ≴ dis 55&10 ≰	Cotton. Belt. Bench-Hotchkiss' \$5.00 \$\sigma\$ doz. "Weston's No. 1, \$8.00; No. 1 McGill's. \$3 Skinner's. \$0 Clothes Line, Hart's list. "Reading list. (Hart's list. "Reading list.	, \$7.00 per doz net 00 per doz, dis 10 % r doz \$6.25, dis 20 %	Plow Bits, Greenfield Tool Co
Griswold's Patent Bits	Seymour	dis 65&10 %	Wood and Metablic	dis 20210 \$dis 49 \$dis 65&10 \$ singdis 20 \$	Sargent's list	dis 60&10&10 % dis 83½&5 %10 % dis 60&10&10 %	### A STATES AND STATE
Parmelee'ssmall, \$30; large, \$30	Huffer	dis 3834&10 \$dis 60&10 \$dis 60&10 \$	Fellos Plates	# B 15c; dis 25&10 % to £ currency—dis 25 % \$5.00 to £ currency	Celling Harve list Harve list Harves Sargent's list Coat and Hat, Harve list Sargent's list Reading Harve list Harve list Reading Wrought Staples and Hooks and Staple Greek Greek Hooks and Eyes.	dia 40&5&10 % dia 40&10 % dia 60&10&10 % dia 60&10&10 %	Flumbs and Levels. Flumbs and Levels. Stanley R. & L. Co.'s Pat. Adjustable
Hollow Augers, Douglass	Garreyson. Clark's Nos. 1, 3 and 5. Clark's No. 3. Nos. 2 4.45, 5. Can Openers. Messenger's Comet.	3, 10 dia 55 \$ dia 70 & 5 & 10 \$	Arcade File Works. Auburn File Works. C. B. Paul's. Heller & Bros Hiscox File Mfg. Co. \$5 0	\$5 00 to £ currency \$5 00 to £ currency \$5 00 to £ currency	Wrought Stanies and Hooks and Stanie Staniey's list.	dia 404:10 %	Standard Rule Co.'s New Adjustable
" Ives expansivecach \$4.50—dis 40.50 Universal Expansive.each \$4.50—dis 10.9 Gimlet Bits—Screw, \$7.50: no screw, \$9 dis 20.2020 " " Dlamondper doz \$1.00 dis 10.2	Messenger's Comet	er doz \$3.00 dis 30 % er doz 2.25 dis 50 % er doz 3.75 dis 20 % er doz 2.35 dis 50 %	Johnson & Bro File Co	\$5 00 to £ currency 4 50 to £ golq	Whiffletree—Patent. Hooks and Eyes—Malleable Iron	dia 60&10&10 %	Pocket Levels. dis 50&10 % Pulleys. Judd's Axle. per doz \$0.75 dis 40 %
" Universal Expansive, each \$4'50—us 19 a Gimlet Bits—Screw, \$7'50; no screw, \$9'. dis 206:10 a Gimlet Bits—Screw, \$7'50; no screw, \$9'. dis 206:10 a Gimlet Bits, Shepardson's,	No. 5, Iron Hangle	er doz 2°35 die 50 % 00 9°00 die 55&10 %	Jowitt's. J. & Hiley Carr. Horse Rasps. Stubs'. Hutcher's.	5 00 to £ gold 7 50 to £ gold 4 50 to £ gold	Herse Nails. Nos. 5 6 Ausable. W B Soc 27c 2	7 8 9 10 5c 24c 25c 25c 6c 45c 24c 25c	Land
Morse's Bit Stock Drill , List of Jan'y 1, '76dis 25 % L'Hommedieu's Ship Augers	Sardine Scissorsper doz	17-OH ALE ALL CO ALLE W	Butcher's. Water Spencer & Co.'s "Diamon Fisher s. Moss & Gamble. Thes. Turner & Co. (Peter A. Fra Horse Rasps. H. Diaston & Sons. Limet & Co. (French).	4 75 to £ gold	Horse Nalls Nos. 5 6	6c 25c 24c 28c 6c 25c 24c 28c 6c 25c 24c 28c	Brain Screw
Vaughan's Post Hole— 6 in. \$28 60; 7, 8 and 9 in. \$25 per doz	Hicks & Goldmark's G. D. & S. R E. B. 1-10 Groun E. B. 1-10 Turne		H. Diaston & Sons		National, Pointed and Polished, Pat. Fin '29c 25c 2 National, Pointed and	8c 22c 21c 30c	Pannes. new list dis Douglas Cistern, etc. new list dis S. & F. new list dis Union Mfg. Co'a. Cistern and Pitcher. dis 35 g Rams dis 25 g " " Garden Engines dis 20 g " " Garden Engines dis 20 g
Watrous Ship Augers. dis 20 s Vauchan's Fost Hole— 6 in, \$43 60; 7, 8 and 9 in, \$25 per doz. dis 20 s Leed*s. \$4 00 each—dis 10 g Awise, Sewing, Common. der gross \$1:15—dis 25 g Awise, Sewing, Common. per gross \$1:15—dis 25 g Ess. per gross \$1:50—dis 15 g Fatont Feg. per gross \$1:50—dis 15 g Fatont Feg. per gross \$2:50—dis 16 g Per gross \$2:50—dis 5:50 dis 5:50	Capper Consultation of the		Fluting Machines, Mrs. Coles 5 in., \$4 Popy_sin., \$4'55, 5 in. \$6' Mrs. Knox, No 1878 6 Knox, 4 inch Bolls 6 Peerless, 4-inch Bolls	700; 7 in., \$7.00, dis 25 % in. 5.50; 7 in. \$6 dis 25 % .each \$5.20, dis 20\$10 %	Perkin's P't'd—Biack. " 26c 23c 21 Perkin's Pointed and Polished. " 27c 24c 2	le 21e 20e 19c 19c	" Garden Engines dis 20 ; Punchess Bett or Drive per doz \$2.00; \$2.25; \$3.26 dis 30 ; Byring per doz \$6.31 dis 456.00 ; Leach's Pate.)t dis 20 ; Bemis dis 20 ;
Patent Feg	Colt's. Sweepers.	1-10a, 80c., gold	Peerless, 4-lach Rolls	3 90 each dis 10 % 5 6J each dis 10 % 4 00 each net	Perkins Pronted and Polished. 27c 24c 27 Putnam Hammer P't'd 27c 24c 27 Vulcan, P't'd & Blusd. 81c 28c 28c 27 Vulcan, P't'd & Blusd. 81c 28c 28c 28c 28c 28c 28c 28c 28c 28c 28	e 21e 20e 19e fe 25e 26e 28c fe 25c 24e 28c	" Leach's Patest
" Clark's	Carridges,—Metallic	each 2 75 net eis 57½ @ @ \$ dis 30&10 \$	Improved Knox (Climax), 4 inch.	2 45 each net 5 15 each net 4 90 each net	r'utnam	500 lbs., dis 5 % 1000 lbs., dis 5 %	Barn Door,
Stanley's Ereclator 1818 90-018 80830 SAxes Blood's per dox \$10 00 ex \$11 00 net D. R. Barton Tool Co.	Colts Carpet Sweepers. U dos. Welcome. Carridges.—Metalic. Carredges.—Hore and Curry Cotton. Wool. Uarpet Stretchers. Cast Steel, Pollahed. Description. Cast Iron, Steel Points. Der Cast Iron, Steel Points. Cast Steel.	er doz \$5:00 dis 30 %	Peeries, 4-Inch Rois. Improved Knox (Climax), 4 ineb. " " " " " " " " " " " " " " " " " " "	6 00 each net 5 00 each net 4 00 each net 6 75 each net	Ferkins', Yulcan and Giobe ##sarse Sibaces. Burden. R. I. Horse Shoe Co., Perkins' impro Med. and Heavy. Mule Shoes. Ferkins' Snow The Boston Horse Shoe. Boston Holling Mills Hand Made. Tec A was, thisels, &c., Tec A was, thisels, &c., Tec A was, thisels, &c., Tec A was this the state of t	500 ibs., dis 5 \$	Hakes Gro N. E. Hangers Glas 60-610 Hanger Straps Hanger
Hud & Rasor Blade	Casters. 3ed. Plate and Shallow Socket. Deep Socket. Castle Leaders.	dis 45 @ 50 %	No. 2. 5-inch Roll	00; 8 in., \$6.50 each net	Med. and Heavy Mule Shoes. Perkins' Snow.	# keg, 4.62% # keg, 5.62% # keg, 5.62%	Malleable
Underhill'8.	Deep Socket. 'astile i.end.rs. Hotchkiss' Sons'. Humsson, Beckley & Co.'s. Sargent's.	dis 60 %	Crown4% in. Roll, \$375; 6 in., Domestic Fluter. Geneva Hand Fluter.	1'00; 8 in., 5'25 each net	Boston Rolling Mills Hand Made Ice A wis, Chiness, &c. American ice Chisel.	per keg \$500 .per doz \$6:50 net	Evan's. dis 40 % Imitation Emerson. \$\Pi\$ doz \$\Pi^75-\dis 40 % Hunt's.
Ten Evck	Sargent's Chatu Engusa Coil	dis 60&10 %	Forges. Empire" (W. P. Kellogg & Co.). Keystone Portable Forge Co	dia 20 %	National "	per doz \$225, net	Saunder'snet & 10 %
Ten Evek	Trace, 6%-10-2by the cask, W	16 % 1-16 % pair, gold 50 @ 52c pair gold 55 @ 57c	Forks. Hay, Manure & Spading. Plated A 1. " Keed & Barton.	dis 35 % dis 40&5 % dis 40&5 %	Wood Head Picks, Sargent's per do: iron per do: ice Mallets, Pick in Head	2 \$1.85, dis 60&10 \$2 \$1.85, dis 60&10 \$2 \$1.85, dis 60&10 \$2 \$1.75 net	Fon and Timed.
Light or "Common" dis 25&10 % All other Spring Balances	German Coli	dis 25 % gold 10% & 11c.	Plated A 1. " Reed & Barton Fruit and Jelly Presses. Enterprise Mfg. Co Fry Pans. Hurnfished P. S. & W. new list.	dis 20 %	Ice Axes Small, Cast or Malleable ROTTION. Brass. Enameled.	per doz \$1.50 net	Rivet Sets
Bannas. = ralect	Chalk. White. Red. Blue. White Crayens.	# gross, 55c net	No 0 1 2 3 .	25 6:00 7:00 8:00 9:00 5 7 8	Ames' Butcher Knives	dia 30 g	Stair dis 40&10 4
Bells.	Bue. White Crayens. Chiseis. D. R. Bafton Tool Co. (all kinds) Socket Framing, Douglass, Extra		Marking Star Wire Smith's Patent	dis 35 % dis 10 % per doz \$1800, dis 40 %	Bhoe Bread Bread Bread Bread Bread Bread Bread Broket.	See Cutlery	Motiers.
Hand, Light Brass. Gas Gaze Light Brass. Gas Gaze Light Brass. Gas Gaze Gas Gaze Gas Gaze Gas Gaze Ga	Socket Framing, Douglass, Extra Crossman Buck Bros new Hart Mig. Co., No 1.	dis 60&10&10 \$dis 60&5 \$ list dis 17% @ 20 \$dis 60&10 \$	"Smitta's vation. Gimiets. Nail and Spike. "Bee "Gimiets	Ale 201/A40 #	K. nobs. Carriage (Jap'd &) cents per gross) Base—Common. Plush Tip. Elastic End. No. 8	dis 60&10 %dis 30&10 %dis 10 %	Manila. % inch and larger 3 b 15 c % inch # 2 15%c % and 5-16 inch # 2 16 c
" Silver Chime	Witherby Tool Co	dis 60&10 %	" Hartwell's	dis 40 %	Base—Common Piush Tip. Elastic End, No. 8. Door, Mineral	5 dis. 95 %	Tar'd Lath Yarn P 16 c Hay Rope. Sinch and larger # 3 11 c
Brook s	Crossman. Buck Bros. new Hart Mfg. Co., No. I. Merril. Witherby Tool Co	list dis 17% @ 20 % dis 60&10 % dis 60&10 %	Tinned and Enameled. Family, Howe's "Eureka". L. F. & C.'s "Handy"	dis 35 %	Furniture, Piain	ross inch, dis 10 %	Barn Door. revised list dis 64:10 s
Prook s. dia 50 s	Socket Corner	dis 60&10 % dis 60&10 % dis 40 %	" Douglass' Glue Pots. Tinned and Enameled. Family, Howe's "Eureka" L. F. & C.'s "Handy". Grind Rione Fixtures Sargent's Patent Beading Hardware Co. Hart Mrg. Co.'s. Hek Bros.	dis 70&10 %	* Reading	dog \$4'00 dis 20 %	Chapin's dia 60&10 \$ dia 50&10 \$ Stanley die 60&10 \$ dia 50&10 \$ Stanley die 60&10 \$ dia 50&10 \$ Standard die 60&10 \$ dia 50&10 \$ Stephens dia 60&10 \$ dia 50&10 \$ Willia Thrail & 50a dia 50&10 \$ Willia Thrail & 50a dia 50&10 \$
Pull	Fanged Firmers, extra. Butcher s New nonid's Bear & Jackson's Buck Bros (Shank)	\$5°50 to £ gold \$5°00 to £ gold \$5°25 to £ gold	Hammers. Emmet Hammer Co.'s Handled Sledge & S Maydole s Henry Hammonds Chency S	tone. # 10 40c.; dis 40 %	Lapterus. No. 0, \$11.00; No. 1, \$ Tuoular. No. 0 \$11.00; No. 1, \$ Peerless No. 5, per dos 1 \$\text{Ktn}\$. Yankes	14'00 dia 5 @ 10 %	Willis, Thrail & Son. dis to&10 \$ dis 50&10 \$ Sed Prens. From 4 to 10 lbs. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
Cow - Common Wronght	iron, Providence Tool Co.'s, Wrt. Iros Adjustable, Gray's Lambert's	dis 25 % dis 20 % dis 20 % dis 20 % dis 20 %	Humason & Beckley Mfg. Co	dis 381/ % list, Jan. 1, '77, dis 15 % dis 12 // %	Brady's Patent	dis 10&10 \$dis 10 & 10 \$dis 10 & 10 \$dis 10 & 10 \$	Self-Heating. per doz \$9.98 @ 9780 net " Tallors per doz \$19.75 net Mrs. Potts. dis 20 % Sand Paper.
Cow — Common Wrought	Adjustable, Gray's. Lambert's. Saow's. Hammer's. Cabinet, Sargent's.	Ata 604-10 g	Magnetic Tack	dis 25&10 6 dis 20 %	Yanzee De Beque Police amail, \$750: is Lard Freenes Draw Cut, is inch. ea Enterprise Mfr. Co. Lecase Squeezers Lecase Squeezers Orocciain Lined per Dulaps Improved Dulaps Improved	arge, \$9°00, dis 5 % ch \$65 00—dis 20 %	Beader & Adamson's Fint, 00 to 114\$4 25 \$\pi\$ ream \\ 2,2\pi & 3. 4 75 \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Texasdis 40 %	Superior	dia 40 %	Warner & Noble's. Hand Cuffs and Log Iron Tower's Hand Cuffs, \$4 00 per pair Leg Irons \$6 50 per pair. Providence Tool Co.'s Hand Cuffs. Leg Irons Handles.	dis 25 %	Lemon Squeezers. Porcelain Linedper Eureka, Tinnedper	doz \$7 00, dis 18 %	Star — \$\$\text{\$\exititt{\$\text{\$\exititt{\$\text{\$\e
Belleves Biscamiths Common List of Sept. 15 dis 25 s	Cocks. Brass Racking Lock and Globe. Lever Bibbs. Ale and Beer. Coffee Mills.	dis 45 %	Handles. Door or Thumb Latches— Nos. 0 1 2 Per doz \$180 1:00 1:18		I tuon Wah	Ata 90 c	Common w h 16 @ 18c. net
Mouldare' dis 255 Inand Bellows dis 105 Silind Adjunters Domestic \$\psi\$ dor \$\frac{2}{3} \cdots \text{20}\text{3} \cdots \text{20}\text{3} \\ Silind Fracteners dis 205 Yat Sand's No. 4000, \$\frac{2}{3}\$ \cdots \text{20}\text{3}\$ (dis 205 Vat Sand's Paisters Per gross, \$\frac{2}{3}\$ (40 \text{415} \text{5} \text{5} \\ Washburn's Paister \$\psi\$ gross \$\frac{2}{3}\$ (40 \text{415} \text{5} \text{5} \\ Merriman's Paister \text{415} \text{415} \text{415} \text{415} \text{5} \\ Merriman's Paister \text{415} \t	Ale and Beer. Coffee Mills. Bosrd and Box Increase Wilson's.	dis 25&10 \$	Per doz \$180 100 118 Roggin's Latches	*35 1*50—dis 60& 10 \$ 1	Cotton Chaik. Sil. Lake ChaikNos. 0, 1, 2, 3, \$6,6 Mason's. Wire Clothes, Gal'd. Locks and Latches.	50, 7, 7:50, dis 20 % dis 20 % each 50c. n t	Patent.
" old pattern	Ceffee Mills. Board and Box Increase Wilson's Selsor's Pat American (Enterprise Mfg. Co.). French Steel The Swift.	50, \$10 50—dis 25 \$dis 20 \$dis 20 \$dis 20 \$	Per Gos \$700 FOW F15 Roggin's Latches		Cabinet—Gaylord (484 958 589 d	Snsh Locks Clark's Nos 1, \$10-00 ; No. 2, \$8-00 per gross
Hind Staples. Slind Staples. Boardman's Patent, % in. and larger	French Steel. The Swift. Compasses and Dividers. Bemis & Call Co.'s. Cook's. Expensior. Miller's Patent. Coopers' Tools. Bradler's. Coopers' Tools. Cons. Extron Cool Co. Carkscrews.—Humsson & B. Cora Knives and Cutters. Bradler s. Crow Burs.	dis 35&10 %	Hammer and Hatchet. N. Carolina Handle Co. Brag Awl. Hickory Firmer Chisel, ass'td	dis 10 4 dis 15 5 er gross \$3 00, dis 10 5	Trunk Langstroth & Crane's, List Jan. 1, 47. Round Key. Flat Key. Barnes & Duitz, Flat Key. Yale Lock Co., Flat Key. Assect Corection, Flat Key. Shepardson's, Flat Key. Shepardson's, Flat Key. American Lock Mfg Co.	dis 33% & 10 %	New England. dis 25 5 Hammond's Window Springs. dis 25 5
ileck. Officeratial Pulley Blocks	Miller's Patent. Coopers' Tools. Bradler's.	dis 25& 10 \$	Apple " ase'td " large	6 50 6 00 7 50	Sargent & Greenleaf, Flat Key Continental. Shepardson's, Flat Key	dis 20 %	Sausage Stuffers or Fillers. Miss. Perry 2 dox No. 11, 315 : No. 10, 521—dis 30 5
Blewers, Keystone Portable Forge Co	Corkscrews.—Humason & B Corn Knives and Cutters.	dis 20 € 25 € 10 €dis 25 € 10 €	File	6 50			Draw Cut No. 4.
	erow Burs. Cast Steel. Iron. steel points. Crncibles.—Gautier & Co	# 11 ilc. net	large large	8 00) dis 25&10 %] .per set \$1 &5—dis 10 %] set \$1 00—dis 20&10 %]	Brantord. Norwich. Russell & Erwin. Norwalk. Nashun. Maliory, Wheeler & Co. P. W. F. Corbin.	a of Jan. 1, 1877. 	Sansa Weigsta.—Sola stellers.
"Shutter dis 00&10 % "Flush, Stanley's dis 10&10 % "Sarçeat's dis 50%10 % Sarçeat's dis 50%10 % Cirriage and Tire, Common dis 70.85 % cash "Norway Iron dis 50.810 %	Curlibles.—Gautier & Co. Curling Irons, &Cc. 5, 8, 8 in. \$180, \$200, \$240. Curling Tongs. \$ Pinching Irons. \$		Hangera —Barn Door	dis 40 %	Parker & Whippie		" Mill
Cirriage and Tire, Common. us 30-3 x cash " Norway Iron dis 50-3 to 2 cash " R. B. & W (old list) dis 65-5 to 2 cash " Philadelphis dis 65-5 to 3 cash " Sheitou's (old list) dis 62-5 to 3 cash Uniou Nut Company, old list. dis 62-5 to 3 cash Store—American Screw Co. s. dis 50 to 4 cash 5 cash	Pinching Irons. & Curry Comba. Curry Comb Mfg. Co	doz 7 50—dis 20 g	Harness Snaps.	41400 die 4914 = 45 g	Padlocks, Russell & Erwin. Mallory, Wheeler & Co Mallory, Wheeler & Co Manuel & Mr. Wilcox & Co American Lock Mig. Co	and 2 % for cash	Mill, Gang and Mulay
Shelton's Shaved Headdis 45 \$	Curre Combs. Co. Stransis & K.elioge's, Iron & Brass, efficient (List of No. 240, 81). Engber (Vood Tooth (Fuller Bross.) Currain Plass.—Silvered Glass.—Cuffery.	dis 25&10 s doz, \$9700—dis 15 s .per doz \$2.25 net	Juda's Fitch's (Bristol) " Hotchkiss' Andrews'	an ool seen and like an in	Romer's Vulcan Hardware Co. New York Lock Co. J. H Mc Williams.	dis 20 \$	Hand, Panel, Rip, &c
Boft Enus. 12% @ 15% @ 1	Outlery, American Table Meriden New lit American Pocket Cutlety Co Am. Pocket—Humason & Beckley Mfg Am. Miller Bro. 's Cutlery Co	st July 76, dts 25 \$	HOUGHENS Andrews'. Sorgent's. New York Wire. Hatcheta issue Blood. Singling, Nos. 1 2 3. \$ 4 Lathing. 1 2 5. \$ 4 Hunt's. \$ 4	dis 204:20 s dis 15 € oz \$7 25 8 00 8 75	Barnes & Deitz	dis 25 \$dis 40 \$dis 25 \$	Wheeler & Clemson Mfg. Co.'s Hand
with Augers 5:00 6:00 net Douglass no Augers 5:00 7:00 dis 40 % with Augers 9:00 7:00 dis 50 %	Am. Milier Bro.'s Cutlery Co Naugatuck Cutlery Co Dippers.	dis 25 %	Lathing. 123 # 6 Hunt's Shingling, Nos. 123 # 6 Claw, "123 # 6 Lathing, "128 # 6	DE \$7 25 8 00 8 75 1	Dixon's (P. S. & W.) Nos. 1 2	tio 20 %	Nos. 10i 102 108 104 105 106
Parr's, no Augers	Dippers. Britanna. per de Cocos, Plain per Rimmed per Log Collars- Embossed Gilt.		Shingling, Nos. 128		# doz. \$14 00 \$17 00 \$19 Miles Challenge Nos. 1 # dos. \$2200 # dos. \$2200 # dos. \$2200 # dos. \$2200	\$40 00—dia 20 x 5 d 5 g'rd	Per dos \$1740 1040 1240 940 840 640 618 18 881
Keliogr's, no Augers. 9"25 4"10 net 5"5 Bweets. 9"25 4"10 net 5"0 6"10 net 5"0 ne	Embossed GHI. Leather	dis 20 %	Claw, "123#d Lathing, "128#d Newark's Edge Tool Co. s Shingling, Nos. 128#d	0x 9 60 9 50 10 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Perry's . Nos. 1 2 3 4 4 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 \$36-00—dis 40 \$ 150 \$150—dis 25 \$	Nash 8
#Sow Pins. Lion Nut Co			Claw, "123	os 6 50 7 00 7 50 I	Hales'Nos. 11 12 Draw CutNos. 5 26 8 8 Each \$20.00 \$75.00 \$80.00 \$225.00		daten, Counter goz am—dis a s
Braces. dis 40&5 c	No. 1. Large, Japanned. per No. 2. Medium, per No. 3. Small, per Challenge (Coll) Nos.	doz \$3.50 uoz 2.50 doz 2.00 dis 10 \$	Claw, " 128 doz Lathing, " 128 doz	A 00 A 30 10 UD 1	10 1 2 25 3	00 \$50 00 \$60 00 T	" Tes
Spofford's Patent	Japanned	2:50 8:50 4:50 5:00 1:00 4:50 dis 10 g	# 456 # doz 78 # doz D. R. Barton Tool Co Shingling, Nos. 123 # doz Lath. # 128 # doz Half Hatchets, Nos. 128 # doz	14 00 16 00 18 00 S 20 00 22 00 dls 20 %	Fach \$5:00 \$7:50 \$10:00 \$12:00 \$25 Mejasses Gates debbins Pattern Genuins Tinned ends Bush's	dis 60&10 % E	
Sponord's Patent	No. 1, Large, Japanned per No. 2, Medium per No. 4, Small, per Challenge (Coil) Nos y Japanned per doz 25'00 Coppered per doz 3'5'0 Nickeled per doz 3'5'0 Premium (Coil) Nos 1 2 2 2 2 2 Nickeled per doz 5'5'0 Stuceled Per doz 11'00 9 5'00 5'00 5'00 5'00 5'00	5-00 dis 30 %	Shingling Nos 123	97 30 2 50 B 0 F	Juned ends Juneoin's Juneoin's Weed's Mortan's and Pestics ron Gorting Machines Gac	dis 15 % 8	Common C
			Claw, 123 # de Lathing, 128 # de Underhill's Shing'ing, Nos. 128 # de Claw, 128 # de Lathing, 138 # de	oz 7 25 8 00 8 75	aft's	er doz \$24-00 net	Sox, 1 Handle
Humason & Beckley Mfg. Codis 204:10 \$	Drawing Knives. Crosman's No. 1. D. R. Harton Tool Co. Douglass, Extra. Hart Mfg. Co., No. 1. Merrill.	dis 60&10&10 % dis 60&10&10 % dis 60&10&10 %	Claw, 123. • do Lathing, 133. • do M. H. Jones & Co. Shinging, Nos. 125. • do Half Hatchets, Nos. 123. • do	02 12 00 11 00 13 00 8 02 12 00 8 00 9 00 R	Natis. Nata and Washers. Quere and Hex., New List March 1, '76. Uakum. lest.	.7 @ 7%c off list S	/oot dis 60 & 10 % hip (common)
D. R. Barton 7001 to	Nobles Mfg. Co. Bradiev's. Adjustable Handie Witherby Tool Co.	dis 15 % dis 25 % dis 15 % dis 604:10 %	Half Hatchets, Nos. 123 # do Claw, Nos. 128 # do Lathing, "128 # do Broad, "234 # do	z 8 00 8 50 9 00 0 z 9 00 9 50 10 00 N z 8 00 8 50 9 00 z 11 00 18 00 14 50	Oakum. Oakum. Oakum. Oakum. Oakum. Oakum. Oakum. Oakum. Oilera. Oilera. Oilera. Oilera.	M D THE D	1 art, Bliven & Mead dis 25&10 % Douglass Mfg. Co dis 25&10 % No. 1 dis 20&10 %
\$20.25 \$3.75 \$2.25 \$3.75 \$40.25 \$40.50 \$61.00 Butte. Wrought Brass.	Drills and Drill Stocks. Blacksmiths' Broast P. S. & W.	each \$2 50 die 10 % 1 each \$7 50 die 10 %	Emrire Hatchets, M. H. Jones & C Shingling, Nos. 123	z 16 50 18 00 19 30 S 2 84 75 5 00 5 35 B z 4 75 5 00 5 35 B	heet Metal Screw, Zinc. Brass and Copplimated's	oerdis 45 % % % dis 35 % 10 % % 10 % % 10 %	tanley Rule & Level Co., No. 1 dis 30&10 \$ No. 2 dis 40&10 \$ Serrews.
Cast Stass	Broast, F. S. & W. isreast, Atken's. Hotchkias Wilson's. Miner's Falls.	dis 25 & 10 \$	Haif Hatchets. Nos. 123 9 do All pol. Sh'gling 123 9 do Soild Steel Lath 128 9 do	2 4 75 5 10 5 25 P 2 5 25 5 10 5 75 2 7 25 7 50 7 75	rior's Patent or "Paragon"	dis 45 %	touno Head Iron lat Head Iron lat Head Iron lat Head Iron lat Head Iron
OMMON CAST, WOT DRILLED. Fast coint, Narrow. diss sheizle s Broad	ingersoll's (old list)	dis 20 %	Wadsworth's Hinges. Gate, Western	los \$6.25 dis 8036 \$	** Round Gift. Dixon & Lead. Lumber	gross \$6 00 net B gross \$450 net L	hip (common). per doz \$3 00 net hito—Providence Tool Co. dis 10 5 Screw Drivers. dis 10 5 Screw Drivers. dis 10 5 Screw Drivers. dis 25 610 5 Ouglass Mfg. Co. dis 26 65 Screws. dis 60 5 Screws. dis 60 65
Parliament Butts & Mayer's Hinges, dis 40&12% \$ cash.4 Loose Pin	Weston's. Moore's Triple Action. Wilson's Drill Stooks. Automatic Boring Tools.	dis 20 %dis 20 % 25 %dis 10 %dis 20 %	N. Y. State # dox Rolled Plate #	11'25—die 60& lo& 10 % los 7'20—die 60& 10 % T	Picture Cord (Wire). inned (Williams, White & Churchill). acquered loid Plated	dia 90 6 3:	ed
	The state of the s					THE PERSON NAMED IN B. P.	AND

		THE IRON AG	
Nettlefold's Brass	Wringers. Universal, without Cog Wheels. 54:00	MISOELLANEOUS.	Blue, Prusatan, fair to best S0 66 75 c " Chinese dry " in oil 25 6 55c " Chinese dry in oil 25 6 55c " Ultamarine 18 6 30c Brown, Spanish 15 c 25c " Van Dyke 15 c 25c " Van Dyke 15 c 25c " Paris 500d, 30c; best, 40c " It oil 30c 45c " It oil 30c 45c " Toll 14 6 4c " English 14 6 6 50c " English 16 6 50c " It oil 38st'd cans, 11c; kogs, 14c " English 16 6 50c " It oil 38st'd cans, 11c; kogs, 14c " English 18 6 50c " Unmoral Purits 18 6 50c " Raw " 18 6 50c " It oil 18 6 50c " English 10 10 " English 10 10 " English 10 " Trieste 10 " American, Common 10 " English 10
Nettlefold's Brass	Wingers. Universal, without Cog Wheels. 51-00 Universal, without Fog Wheels. 66:00 Fureks, No, 2, 10 in. 57:00 Novelty No. 1, smail Family Size. 54:00 No. 2, Medium. 66:00 Refiance. 68:00	Common Plain Brass Pail Ears	" Chinese dry
Hand Rail, Sargent's	No. 2, Medium "	High Brass Scrap, 16 cents. Low 18 cents. Gilding, 20 cents.	Brown, Spanish
Scythes Blood's German Steel, Grass W dog \$10 (0)	Kellance, 68:00 Excelsior Bench Wringers. 86:00 'for Set Tubs 72:00	Turnings, Filings and Chips, half the price of Scrap. Terms—Net cash. Interest to be added after thirty	Green, Chrome
# Cast # # F doz 11 00 dls \$1:50	Crown No. 2	days.	Mineral Paints
Sicythes Blood's German Steel, Grass W doz \$10 00	Sherman, 6600 Sherman, 6600 Sherman, 6800 Sherman, 680	Plain to No. 20 inclusive, above ¼ in. to 3 in	Orange Mineral. 14c Red Lead, American. 84c "English 85c
Young America		Number. Nos. 24, 25, 26, four cents advance on List for each	Venetian (N. C.) dry
Wadsworth's Grass. dis 30 9 Bush dis 20 9 Soythe Snaths dis 20 9	Stamped Deep and Retinned Waredis 3814 %	Number. Above No. 21, special rates. Plain 1/4 is ch	Rose Pink
Shears and Scissors.	Plantshed Tin Wave	916 110 110 All Mandrel Drawn Tubes, 5 cents advance on List	Raret in oll
Gast From Gast Gast Gast Gast Gast Gast Gast Gast	And the state of t	Prices. Fancy Tubing to No. 20	Umber, Burnt
Pruningper doz \$\$5.50	METALS.	English, Scotch and Extra Patterns Fancy Tubing to No. 20	" Raw
Sliding Door, M. W. & Co. list	HON.—DUTY Bars, 1 to 1% cents per ib Sheet, Band, Hoop and Scroll, 1% to 1% cents per ib. Provided, that none of the above Iron shall bay a less rate of duty than 35 per cent. Pig. \$7 per ton; Polished Sheeta, 3 cents per ib.; Wrought Scrap, \$8 per ton; Cast Scrap, \$6 per ton. Rallroad, 70 cents per 100 ibs. Boiler and	vance on List. Add to 2 cents 1/4 cent for each additional cutting	** Rnglish
Hatfield'sdis 50&2 % Hatfield's	than 35 per cent. Pig. \$7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, \$8 per ton: Cast Scrap,	under two feet. All Mandrei Drawn Tubes under % in., 25 cents per pound ad ance.	Kingliss 72/5(c. gold Trieste 10'
Sheaves Shea	Plate.1% cents per lb. Piate.1% cents per lb. Pig Iron—American.	EINCTUBING.	Waite, Paris, English, prime. in bbls. 2% @ 2% 2 18 Xellow Ochre, French 25 37 38 38 38 38 38 38 38 38 38 38 38 38 38
Shovels and Spades.	Foundry No. 1 * ton, \$21.00	Plain 28 Fancy 31 Scotch and Extra Patterns 34	Vermont In casks 14c Yellow Chrome In casks 14c Yellow Chrome In casks 14c Yellow Chrome In casks 14c In casks
Rowland's dis 305 Old Colony dis 305 Middleboro' Shovel Co dis 305 Dunning a Shovels and Scoops dis 306	BOOTCH.	GERMAN SILVER TUBING.	Zinc White, American No. 1 dry
Duning s Shovels and Scoops	Glengarnock	4 Per cent. 95 6 96 9 1120	" French (Paris)
Polished Steel	MAE AFOR		Linseed Raw
18 18 18 18 18 18 18 18	Rais.	16 # 1.46 16 # 1.145 18 # 1.155 20 # 1.156	Whale, Crude
Spokes Shaves. Defiance Metallicnew list dis 25 %	Steef, " 50 00 00 00 00 00 00 00 00 00 00 00 00	ANTIMONY 15% @ 16c, currency	"In oil 128
Wooddis 30 6	Bar Iron from Store.	Spanish6% @ 6%c gold	Lard, Pure Winter
Spoke Trimmers. Bonney.sper doz \$10 00 dis 40 %	\(to 6 in. x \% to 1 in	English	Cotton Seed, Crude. " 63c Seed, Crude. " 63c Seed, Crude. " 63c Seed, Crude. " 67c Seed,
Spoke Trimmers	Refined from. % to 2 in round and square 1 to 6 in. x % to 1 in	Bar dis 10 % 8 % Pipe	Nest=foot, Winter
Tinned Iron die 15 %	1 to 6 in. x % and 3-16, and 1 to 6 in. x 1% to 2. % b 2-7c Rods—% and 11-16 round and square b 2-6c	Shoet dis 10 % 9%c. Suck. 10%c.	Asphaltum
10	Bands—1 to 6 x 12 to 5-16	N. P. U	
Rogers & Bro., A 1 dis 55 g Reed & Barton dis 40&5 5	Plow size	WTREE Dury : Hars Ingots Sheets and Colle valued	PRATT
Derby Bilver Co.	American American	at 7 cents perlb., or under, 3% cents, over 1 cents, and not shove 1, 3 cents perlb. over 11, 3% cents perlb. and 10 % at vai. Eathway Bars 1% cents perlb. Kall- way Bars, in part Steel, 1 cent perlb. Provided, that Metal cemented, cast or made from Iron by the Besse	Hardware & Iron Merc
erman Silver. dis 30&5 % in (P. S. & W.)— Teas. \$1.50 % gross. net	Not. 10 to 20.	Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or de acription, shall b classed as	MANUFACTU
Teas. \$1.50 \(\pi\) gross, not Tables. 2.75 n In (Cowles Haw, Co.) dis 10 \(\frac{\pi}{2}\) Sgencil Combinations. -5 tafford Mrg. Co.	28 44 4%c 5%c 5%c	American Cast Steel.	THE FLETCHER PO
Stencil Combinations —Stafford Mfg. Co.— Stencil Combinations —Stafford Mfg. Co.— 1 114 114 2 214	21 to 28	Tool	The heat the absence of
Per doz		Tool	The best, the cheapest, the most during Made from the best cast steel; will bore one and is run with less rewer, work
lingostan Stone	tussia, Nos. 5 to 16. # B 12% @ 130 Stained, No. 1. 120 leigtan. 10c One piece Corrugated Sheet Iron Elbows.	Sheet	one, and is run with less power; works and will cut sharply through grass or ro start it.
Axe Stone	One piece Corrugated Sheet Iron Elbows.	Saw Plate, gang and X cut	The ordinary flat bottom post augers while the blades split and crack with st
** Slips	5 556 6 7 inch. 52:50 8:50 4:50 5:25 6:50 per dox.	Chrome Steet.	stand any force applied to it, while its n
"Slips	MUSSIA IRON. 134 5 54 6 7 inch. 55'00 700 950 12'00 14'00 per doz.	Tool	A point and over apping blades, in such
Steve Pellss. Geeph L/Ixon's	COPPER - Doiv. Pig. Bar and ingot, 5c.; old copper, 4 cents # &; Malufactured (including all articles of which copper is a component of chief value) 45 % ad	Hammer	(a)
SHIRE OHIT DOL ELONG #0.40 HEP		English Steel payable in gold, net.	TA THE TAKES OF MARCH THE
Squares dis 50 \(\); full cases, dis 50\(\)till (ec) dis 50 \(\); full cases, dis 50\(\)\(\)till (ex) full cases, dis 50\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\	American ingot	Rest Last	<u>a</u>
ry Squares and T Bevels	Braziers Copper, ordinary sizes, over 16 oz., per square foot	Best Double Shear 1770	V
Disston's Try Squares No. 1	Braiters Copper, ordinary sizes, over 16 oz., per square 100	de 2d quality " 10kg	boxes, and miscellaneous articles, in ma
Dission's Try Squares No. 1	Circles, 84 inch diameter and over	Sheet Cast Steel, 1st quality	land, are cut by the Fletcher, where oth This auger costs a few shillings more
		" " 3d quality " 12%c File Steel, Flat and % Round " 12%c	less, find it the cheapest in the end. There is no suction when this auger is
Full dis 10 % dis 10 % dis 10 % for cash Copper. Am and Swedes dis 10 % for cash Copper. B 45c. dis	Soit Copper Bottoms. 38c. # 25	### ### ##############################	out, when filled is easily lifted out and e to use, self-sharpening, by its peculiar man
Shoe Matte		SOLDER	This auger is now ready for the marke
4-8ths and longer, 9c.; 8%-8ths, 9%c. h h, dis 10 %	case	MODEL STED -Durry In Page Ram and Plates at an	from the list
5	O'NEILL'S PATENT PLANISHED COPPER.	per 100 lbs. Silesian, cash	G. B. WALBRIDGE & CO
Tap Berers. dis 20&10 % commor and Ring. dis 20&10 % res' Tap Berers. dis 10&10 % 25 % interprise Mfg Co. dis 20 %	14 and 16 oz. and heavier	TIN-DUTY: Plates, Sneets, Tagger and Terne, 1'1c. per lb.; Electro-galvanized Plates, 2 cents per b; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs, free. Banca, subject to duty of 10	TUE DAI AOF
Interprise Mfg Co	tiolier Sines. 7 in., 14x52. 8 in., 14x56. 9 in., 14x60 4 and 16 oz. and heavier	per cent. Banca	THE PALACE
day 8		TIN PLATES, CURRENCY PRICES.	PATENTED De
Tea Trays, mericaa Tea Tray Co	14 and 16 oz. and heavier	1 C 10x14 Prime Charcoal	4
In Case	Brown & Sharp's Gauge the Standard for Metal; Old	12x12 } Prime Charcoal	
nterprise Mfs. Co. (Champion)	English Gauge the Standard for Wire. BRASS MANUFACTURERS' PRICE LIST.	14x30) D C 1235x17 "	00
ashua Lock Co.s	January 1, 1877. Cash prices for Roll and Sheet Brass. For less quantity than i00 pounds, add 3 cents per pound.	For each additional X add 275 OOKE TIF PLATE. 275 Best, 2d quality. Ordinary.	
Finners Tools and Machines. S. & W	HIGH BRANS All Nos. not thinner than to No. 28, wider than 2 in.,	I C 10x14) I C 12x12 } 7-50 7-25 6-50 @ 7-00	200
S. & W dis 10 \$\) Traby- une, Newhouse dis 25e2 \$\) Peck, btow & Wilcox dis 45 \$\) Hotckniss dis 40 \$\) Blake's Patent dis 40 \$\) Cuse, Wood Choker W dor holes 15 \$\) Patent Choker (Union W dor holes 16 \$\) Nut Ce. W doz \$\) Round, Wire W doz \$\) Square, W doz \$\) Square, W doz \$\) Case, W doz \$\) Tatent Setting per dox holes 2c net Catch-ein-alive W doz \$\) Catch-ein-alive W doz \$\)	and wider than 14 in Soc. Ail Nos. to No. 28, inclusive, and widths over 14 to	TERNE PLATE.	
mase, Wood Choker	Min. inclusive	I C 14x20 \$7:00 6:50 \(\) 6:75 6:25 \(\) 6:50 \(\) 1 X 14x20 9:25 \(\) 1 C 20x24 14:50 13:50 \(\) 13:50 \(\) 13:50 \(\) 13:50 \(\) 13:50 \(\)	5
Nut Co.)	30 in. inclusive	1 X 20x28 19:50 1 C 20x280 21:75 I C 14x20 M F. Brand \$8:25 @ 8:37 %	00
Cage. " Que 2 W to 2 50 net " Que 2 50, dis 10 5 " Patent Self Settingper doz holes 25c net	All Brass thinner than No. 38 is Flaters' Brass, at	ZINC.—DUTY Pig or Block, \$1 50 per 100 lbs. Sheet	Jan 1
theon's Brick and Piostowing	and lengths under 30 in., in width wider than 2 in. 37c Printers' Rules. 40 in. and under 40 in. 55c Circulus sheets, in diam. from 4 in. to 14, inclusive. 41c	Spect	
ace's Plasteringdia 20 q	9ver 14		
ades' Brick	30 30, 40,51c	Paper Stock, Old Metals, & c.	
rden dis 25 g Friors. itter and Cheese. dis 25 g Ventilators (Window).	LOW BRASS.	Canyas linen (Dealers' Selling Price.)	Three Patterns.—Twe
Ventiintors (Window), ickel and Giltper dozen \$1600 @ 1800 Visces	Four cents # 5 more than High Brass. Ording Metal 8c, # 5 more than High Brass. In Bars	White itnen ress. No. 1	MOST POPULAR GOO
Peter Wrights Peter Wrights Peter Wights Peter Wights Peter Wights Peter Wights Peter Wights Peter Wights Peter Wrights Pe	POR SLITTING	Canvas linen (Deuter's Setting Fries.) cotton, No. (9 %) White tinen rags, No. 1, 5% (9 %) Colored. (5% (9 %) Mixed woolens (5% (9 %) Soft woosens. (5% (9 %) Soft woosens. (5% (9 %)	Illustrated Price Lists supplied upon application.
Peter Wrights 160 and over, 22c \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Metal, in width 2 in. to 1/2 in. to No.28, inclusive, 1c. per B. advance.	Soft woosens	SOLE MANUFAC
Wilson'sdis 30&10 %	Mctal, in width 2 in. to 1 in., thinner than No. 28, 2c. per b. advance. Mctal, in width 1 in. to 34 thinner than No. 28, 3c. per b.	Mixed woolens 2k @ 3k 80rt woolens 5 k @ 6k 80rt woolens 5 k @ 6k 9 unuv baggring 3 @ 2k Jate Butts 2k @ 2k Keatuckv baggring 5k @ 5k Waste paper and scraps 1 @ 5k Bope cuttings 1k @ 3k Kentucky Bale rope 4 @ 4k Oakum junk, No. 1 5k @ 2k Ne. 2 6 %	SIDNEY SHEPARD &
# Trenton. dis 20 % # Backus and Union dis 25 % # Merrili's. dis 15 % # Fisher & Norris. dis 15 % # 10 %	Metal, in width 1 in. to 3g thinner than No. 26, 32, per 3. advance. Metal, in width 14 in. to 3g thinner than 10. 26, 32, per 3. Metal, in width 14 in. to 3g thinner than 10. 26, 32, 32, 32, 32, 32, 32, 32, 32, 32, 32	Rope cuttings. 14 68 38 Kentucky Baie rope. 46 44	
	Metal, in width 1/4 in. to 1/4, inclusive, not thinner than No. 28, 2c. per B. advance. Metal, in width 1/4 in. to 1/4 thinner than No. 38, 5c. per B. advance.	Oakum junk, No. 1 5% 66 5% No. 2 66 4 Grass rope. 3% 62 4	G. B. WALBRI
Stevens' dis 25 2 Simpson's Adjuntable dis 20 2 Simpson's Adjuntable dis 20 2 Simpson's Adjuntable per dos \$100 dis 20 5 Simpson's Steam's per dos \$100 dis 20 5 Simpson's displayers	advance. Metal, ¼ in. in width and less, i0c. per lb. advance Any of the above widths cut to particular lengths, a'ld 7c. per pound.	Grass rope Tarred Shaking. White Colar Custings, all paper. "Envelope "	
" Hopkins"	GERMAN SILVER MARKET METAL AND WIRE. Market Metal, Wire.	Hard White Shavings, No. 1 6/6	No. 83 Reade Street
anai (Pugaley & Chapman) new list dis 30, oal, Garden and Stone (Pugaley & Chapman) dis 30 % (cob's Pat Self-Olling R. R. and Canal dis 60&19 % Well Wheels.—Revised list dis 60&19 %	4 per cent., 12 in., to No. 26	White Shavings, No. 2	Offer, at low prices, the following
Weil Wheels, Revised list dis 60&10 \$	10 " " 84 1-15 15 " 104 1-40 18 " 1-16 1-55 German Silver Sheets over 13 in. wide, and weighing	Imperfections, No. 2, best folded sheets	MACHIL
right and AnnealedNos. 0 @ 18 dis 52 \ @ 55 \	German Silver Sheets over 12 in. wide, and weighing more than 16 ms., \$2.25 per m. Advance 2c. for each additional in., in width above 12	Newspaper Stock.	MACHI
Well Wheels, -Ecvised list dis 60&10 % in wire and copper . List of Jan. 1. 1877, dis 10 % rass and Copper . List of Jan. 1. 1877, dis 10 % raph and Annealed. Nos. 0 @ 18 dis 53 % @ 55 % 19 @ 25 dis 57 % @ 50 % 19 @ 25 dis 57 % @ 50 % 19 @ 25 dis 57 % @ 50 % 19 @ 25 dis 57 % @ 50 % 19 % 25 dis 57 % @ 50 % 19 % 25 dis 57 % @ 50 % 19 % 25 dis 57 % @ 50 % 19 % 25 dis 57 % @ 50 % 19 % 25 dis 57 % @ 50 % 19 % 25 dis 57 % @ 50 % 19 % 25 dis 57 % @ 50 % 19 % 25 dis 57 % @ 50 % 25 % 25 % 25 % 25 % 25 % 25 % 25 %	in., and 2c. per B. on each No. thinner than Nos. 26 to 36 inclusive.		One Putnam Planer, 6 foot bed.
aivanised, Nos. 7 to 18. market list dia 25 5 Inned Nos. 0 to 18. dia 32 6 2 35 5 aat Steal	All German Silver thinner than No. 36 is Flaters' at 50c, per 3. additional. German Silver Scrap one-third less than net price of 13	Pure Manias 1	One Wood & Light Engine Lathe, 6
dis 20@25 4 inned Broom Wire, Nos. 18 to 25	All German Silver timmer than No. 30 is Fraters' at 50c, per B. additional. German Silver Scrap one-third less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.	Woolen Tullor Clips. 15 4 14	One Tapping or Drilling " 4 One Foot or Power " 4
alvanized Telegraph, Nos. 10 and 11	BRASS AND COPPER WIRE. Glid'g and High Brass, Low Brass Confe	Copper	Two Large Upright Drills.
Grape, 10 to 14	High Brass. Low Brass. Cop7. No. 0 to 30	Heavy Composition	One Justice Upright Dead Stroke H
avanued. Nos. 7 to 18. market list dis 25 ± med Nos. 0 to 18. dis 33 ½ 6 35 5 at 5 steel. dis 20 ½ 25 ± 6 35 steel. dis 20 ½ 25 ± 6 1 vanized Telegrapa, Nos. 8 and 9 ± 5 ± 5 ± 6 1 vanized Telegrapa, Nos. 10 and 11. \$\psi\$ 100 to 10 to	No. 22 % % % 17 No. 22 % % % 17 No. 23 % 41 % 43 % 19	Old lead, solid	One Savage Milling Machine. One Broaching
Walled W	No. 34. 99 48 50 No. 25. 48 50 So. 26. 44 48 58	Care Care	One Tapping "
wronches	\$0, 36. 44 48 55 \$10, 37 46 50 97 \$10, 28. 49 53 60 \$10, 29. 50 66 63	Speiter 9 10 Wrought fron	One Screw Cutting "
merican Adjustabledis 45 s xxter's Adjustable "S" New List, May 1, 76dis 20 s "Diagonal dia 20 s	NO. 25. 43 48 53 NO. 25. 44 48 50 NO. 27. 46 50 57 NO. 28. 49 53 60 NO. 29. 52 56 63 NO. 30. 50 59 69 NO. 31. 50 63 75 NO. 32. 63 67 81	Stove plate ner ton \$1200	One Heading "One Power Shears."
llins & Co.'s	No. 33. 63 77 91 No. 35. 67 71 90 No. 34. 71 75 1:00	Burnt Ironper ton 13700	One Taft Punch and Shears.
(Malleable) dis 50& 10 g amond Hardware Co. dis 40 g	Spring Wire 2c, per B. advance. Flat, Square and Half Round Wire, 5c. per B advance on Round Wire.	Paints, Oils, etc.	One Emery Grinder.
Other Line Wire. Der coil 50c, net Wrenches, Der coil 50c, net Wrenches, Der coil 50c, net D	on Round Wire. Fancy Wire not less than 10c. per - B. advance of Round Wire. Brass Rods, No. 8 and larger, not less than 2 feet	Paints.	Five Hurricane Forges. One Sturtevant Blower.
aft's Pattern. dis 70&5&10 g		Oleak James Coach Hatrasan	200 Mill Cutters, Standard Shapes
nigar's Patent. dis 30 g aft's Patent. dis 20 g aft's Patern. dis 20 g aft's Patern. dis 20 g aft's Patern dis 20 g aft's Patern dis 20 g am a Call s Patern Combination. new list dis 20 g am a Call s Patern Combination. dis 20 g am a formit of the 20 g after dis 20 g after di	lengths, 40c. Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 40c. Wire and Rods less than 2 feet lengths, special rates.	Description Description	Chucks, Drills, Centers, Cutters, &c 500 Polishing Wheels,
iken's Pocket (Bright)per dox \$10.00—dis 50.010 \$	Twelve cents per B. extra for spooling on 1 B. spools.	Engs, Sc.; asst'd cans, 11c	Joo I onsuring wheels,

Patrice Demonstra Balance by	1				
Blue, Prussian, fair to best	Chaik.				Xe
" Chinese dry	Dryer, Patent, Am'n		cana.	0 kc. k	era Ge
Brown, Spanish	Block. Dryer, Patent, Am'n. English.		18	1e.;	al 96
" Van Dyke Gr	Frostings. Glue, White. Sheet. Glaziers Points, Zinc.		*******		Sic.
Carmine, 40	Glue, White	******	******		8 @ 44c
## in oil. 15 60 234 # Paris. R 200d, 30c; bent, 40c # in it in oil. 30c # 30c Mineral Paints 136 40	Glaziers' Points, Zinc.	******	**** ***	**** ***	
faria					
Mineral Paints	Shelisc, English	******	*******	*******	256
Red Lead American	Damar. Sheliac, English. dark Litnarge.				50d
# Familian (N. C.)	Pumice Stone, selected Lumi powdered	08			4 6 6c
in oil asst'd cans the keep ske					
" Indian. dry	" in bulk				8C
Sienna American, Raw	to bulk				80
" Rurot	Whiting, spanish				NC
" Raw " 15 @ 20c					40
" Raw "	Gin				
" Raw. 18 011	PRENCH WIN				
" ID OH	Prices current pe		of 50 fee	el.	
Vermillion, Chinese	Single '		- 0.1		
Trieste		lat.	sq.	Sd.	4tn.
Wn.te Lead, American, pure dry 9ke	6 x 8 to 10 x 15 11 x 14 to 16 x 24	\$ 7:50 8:50	\$ 6.75	\$ 6.25	5.75
White, Paris, English, primein bbls. 24 @ 34c	18 x 22 to 20 x 30	10:75	7·73 9·75	7·25 8·75	6.0
Yellow Ochre, Frenchin bbls. 2% @ 24c	15 x 36 to 24 x 30	13:00	10.75	9:00	1
Yellow Ochre, French	26 x 86 to 26 x 44	14:50	13.50	9-75	
	36 x 46 to 30 x 50	16:00	14'00	11:25	
In oil 18 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	30 x 56 to 84 x /6	17:46	15.50	15'50	
1, in oil	34 x 58 to 34 x 60	18-2	17:25	15:00	
French (Paris)1c	Double'		10 10	11 49	1
tn oll	SIZES.	1st.	2d.	3d.	4th
I toward Name The sale and the bar and	6 x 8 to 10 x 15	and the same of			-
Bolled Garage G	11 x 14 to 16 x 24	13-75	\$11:00 12:50	\$10°00 11°75	8 9:25
Bleached Winter 750	18 x 22 to 30 x 90	17:25	15:75 17:25	14.00	10.04
Sperm, Crude	26 x 28 to 24 x 36	21:00	18:50	14:50 15:75	
" Bleached " 1.28	26 x 36 to 26 x 44	28:25	21:35	17:25	
Seal, Extra Refined	90 x 52 to 80 x 54	28-25	23.52	19:25	
** Spring ** 1-00	80 x 56 to 84 x 56	1307 - 1715	25:00	21.75	i
Cotton Seed, Crude. " ©3c Southern Yellow. " 63c	86 x 60 to 40 x 60	38.52	30:00	27-75	
white	Sizes above 40 x 60-110 00 p	er box	extra f	or ever	y five
Nestsfoot, Winter	An additional 10 per cent. w	vill be	charged	for all	Glas
Sundrie .	more than 40 inches wide.	All alre	a abov	e 52 inc	hea in
Asphaltum9e	leagth, and not making more be charged in the 84 united in	than 8	racket	d inche	s, win
Benzine # gal. 16c	Discount 50& 15 %.				
				_	

de CO.

chants, Buffalo, N. Y. CURERS OF

OST HOLE AUGER.

urable, and the handiest Earth Auger in market, sore three holes while any other auger is boring orks readily in clay, sand, gravel, or muck soil, root sods without the use of showel or spade to

rs in use are easily broken, bent and disabled, strong pressure. The "Fletcher" Auger will a peculiar construction enables it to cut by the ach a manner as to push itself speedily and



ions, such as old filling of tin scraps, sticks, made soil, and roots, grubbings, etc., in new other styles of post augers are broken and bent. re than others, but the purchaser will neverthe-

CO., New York Agents.



enty-Three Designs. ODS IN MARKET.

ACTURERS

CO. Buffalo N. Y. IDGE & CO.,

et, NEW YORK,

NERY:

6 feet bed, 14 inch swing. 4 " 12 " 4 " 8 " Hammer, 50 lbs. and Sizes.

Steel.

SULZBACHER, HYMAN, WOLFF & CO., SANDERSON BROS. STEEL COMPANY.

IRON AND STEEL.

PL HOMOGENOUS DEC.' CAST STEEL GUN BAR-RELS. MOULDS AND ORDNANCE.

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Best Cast Steel Wire Rods and Steel Wire of the finest quality for all Purposes. Sole makers of COCKER'S "METEOR" WIRE PLATES. Railroad Supplies.

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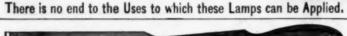


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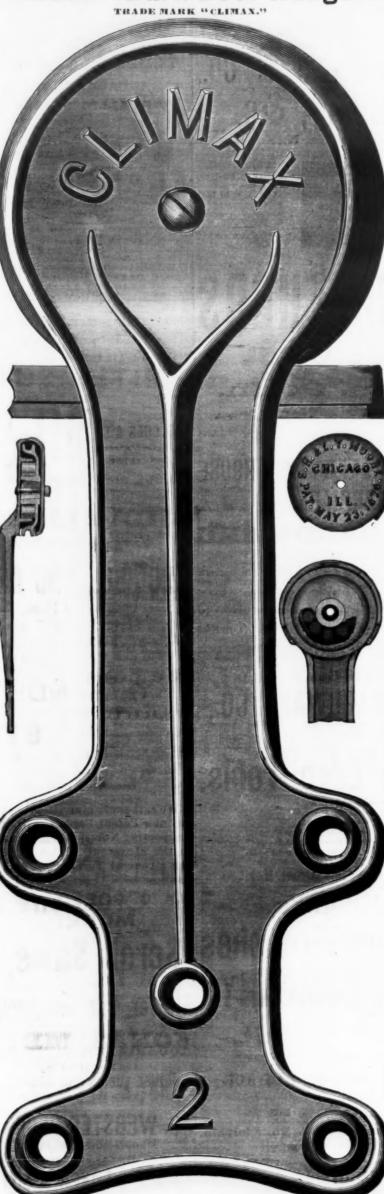
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net net net 20 %	G. S. Hall, Etton & Co. dile 30 Scales—Puffalo Scale Works dis 25 Fairbanks. dis 25 Fairbanks. dis 15 Stove Polish—Gem. gross, \$4 gross, \$5 30; balk, per 6 Palace Lawron, Porcelana & gross, \$5 30; balk, per 6 dec. 55 dec.	% W % % 50 00 W
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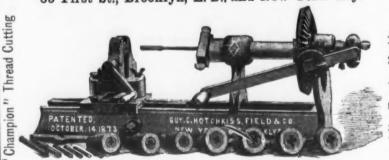
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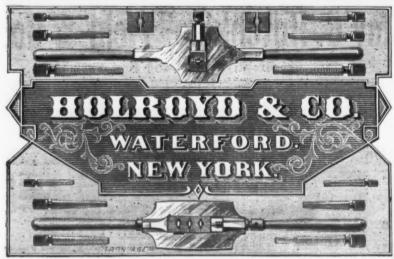
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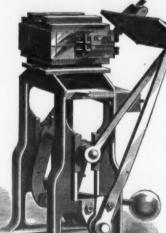
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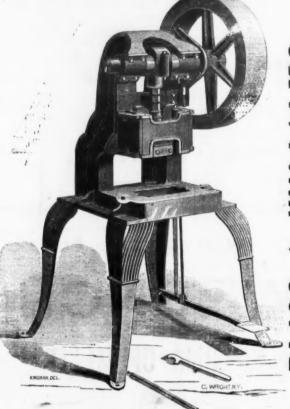
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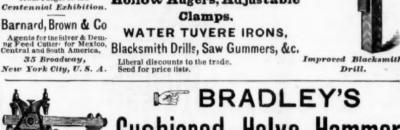
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Hammond dis 15 4

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Apple Parers.—Conqueror. Face \$7
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Double Bitted. 9
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Hunt's 9
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Hunt's 9 Hose,—Boston Belting Co.'s Rubber Medium Sizes, dis39% 10 2 Small Sizes, Hydrat, dis 65 % Poh.

Stone. 14 4/ 66 18 v.

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	96	19:00	21.00	1.90	
	1	21.00	24.00	2.00	\$5.00
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_0	2	85:00	40.00	2.75	10.90
-	236	42.00	48:00	8 25	14.00
	236	45 00	51.00	8.50	15:00
	234	49:00	56:00	3.75	17:00
	38	85.00	63.00	4.95	90 00
	834	64:00	73.00	4.80	25.00
	4	74:00	84.00	5.00	30.00
	436	86.00	97:00	5.20	86.00
	5	94.00	106.00	6.00	42.00
	536	119.00	125 00	6.50	48.00
	6	195.00	138.00	7 00	54.00
	7	150.00	165 00	8.00	68.00
	8	185 00	305.00	9.00	80.08
or.	9	905:00	225.00	10.00	
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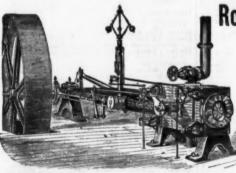
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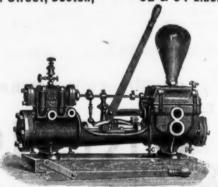
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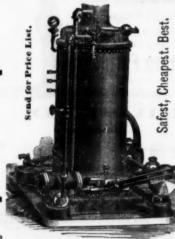
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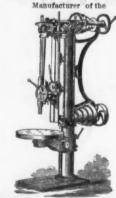
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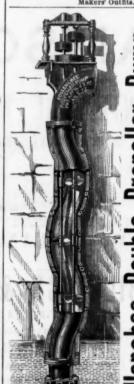


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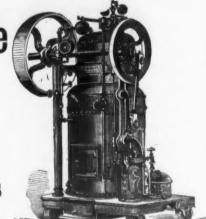
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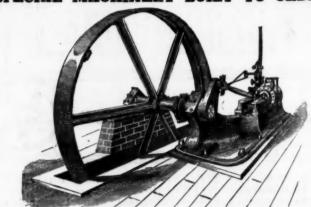
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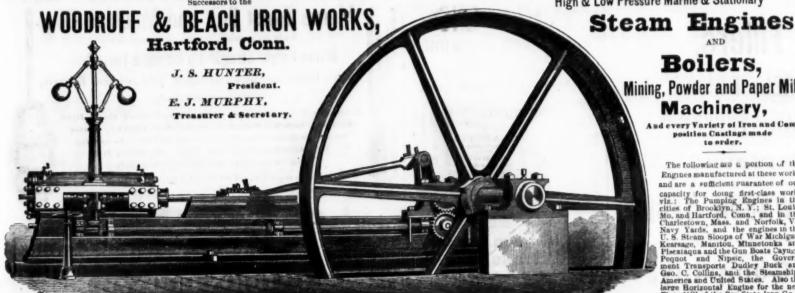
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